MONTANA *Wildlife*

STATE OF MONTANA

Governor — Tim Babcock

Montana
Fish and Game Commission

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Cover Picture

Wild geese are among the earliest birds to hatch. This little "honker", a downy gosling in May, will be a strong flyer by autumn.

—Photo by Editor

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Editor — Vernon Craig

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During organized float trips on the Yellowstone River, almost every conceivable type of craft is seen.
—Photo by Robert Rothweiler

MONTANA BOATING, FLOATING

One of the unique features of Montana is its remaining rivers which still have long reaches in a free-flowing condition. The State Fish and Game Commission is trying to pull a number of these outstanding streams into a recreational waterway system. It is hoped that important segments of these outstanding streams can remain in a free-flowing condition and escape the construction of dams which threaten to impound the better part of Montana's beautiful rivers. Our world-famous rivers are fast disappearing behind concrete.

The boater in Montana will find rivers ranging from raging white water to the wide, lazily flowing ones. Each boater should know his own capabilities and leave rough, hazardous waters strictly to the experts.

Best time to begin floating is after major spring runoff. As a rule of thumb this will be from Mid-to-late June.

Standard gear for the floater, not including safety equipment required by law, should be:

Fishing tackle
Mosquito repellent
Matches in a waterproof case
Camping gear, food and drinking water necessary for the trip
A hand axe
Bailing bucket
Adequate supply of gasoline and oil
An anchor and anchor line
First-aid kit and cream or oil to prevent sunburn.
Dark glasses
Necessary clothing for "unusual weather" —keep it dry in heavy plastic sacks
Plenty of shear pins if you're using an outboard
Before starting a trip, **inquire locally as to river conditions and hazards.**

MONTANA'S WATER SAFETY LAW:

Among other safety features, Montana's water safety law requires that every vessel shall have aboard one life preserver, buoyant vest, ring buoy, or buoyant cushion for each passenger. A vessel for this purpose includes about anything afloat with people in or upon it. Any person or persons twelve years of age or younger who occupy a vessel, under 26 feet, long, in motion must have a life preserver fastened to his or her person. The life preserving equipment must be in good condition and of the type approved by the U.S. Coast Guard.

Vessels must also be equipped with lights, fire extinguisher equipment and flame arrestors for some gasoline-driven craft. Vessels powered by machinery of more than ten horsepower must be licensed. Out-of-state vessels already covered by a license of a federally approved numbering system must be issued a Montana number **only if** they have been in Montana for a period of more than 90 consecutive days.

For further information write to the Montana Fish and Game Department, Helena, Montana.

POPULAR FLOAT STREAMS:

Southwest Montana:

Presently, the Big Hole, Madison and upper Missouri and Yellowstone rivers are most popular for float trips in southwestern Montana. Other smaller rivers may be floated but require considerable skill and contain the hazards of low water and fences across the streams.

Fishing on these rivers rivals the best. Though other species are taken, they are predominantly brown trout waters.

Big Hole River:

Most floating on the Big Hole is confined to that part of the river below Divide Dam (approximately midpoint in the river drainage areas). This portion of the river has many deep holes and is good fishing. Most of the trips wind up at one of the bridge crossings below Glen or near Twin Bridges.

Madison River:

Float trips on the Madison are limited primarily to the stretch of river below Varney Bridge approximately 13 river miles above Ennis, Montana. An area above Varney Bridge is closed to fishing from boats. The Madison offers excellent fishing, and this upper area has been the most popular one for floaters. Brown trout are the most commonly caught game fish.

The upper float could end at Ennis Lake or the bridge at Ennis. It is a comparatively easy stretch of water but the river does break up into many channels.

A second float on the Madison is from below the Ennis Lake Dam to the bridge on the Norris-Bozeman road. The float below Ennis Lake through the Beartrap Canyon is probably the most hazardous afforded by the big rivers in southwestern Montana. There are many rocks and small falls. We would seriously recommend that this float **not** be attempted by inexperienced persons! The area is quite difficult to get into, and in case of trouble, the consequences could be serious.

An interesting float is from the Norris-Bozeman Bridge to the bridge at Three Forks, Montana. This lower float on the Madison River is one of the most ideal. Here, the river is large and meandering and affords no serious obstacles to floating.

Rattlesnakes are common along much of the Madison, especially below Ennis Lake.

Upper Missouri River to Townsend:

Floaters may enter the upper Missouri River by putting into the Jefferson River or Madison River near Three Forks, or may put directly into the Missouri near Trident.

The first leg of the journey would be from the headwaters or Trident to the Toston Dam. This would hurry a boater to make the trip in one day, so an overnight campout might be considered. Smaller boats could be taken out at the dam about three miles above Toston, or portaged. The dam is not high.

A second enjoyable trip is from the old highway bridge at Toston to Townsend. Floaters may take out at the Townsend bridge or go on into Canyon Ferry Reservoir and pull out at one of a number of public access sites or at one of two private docks.

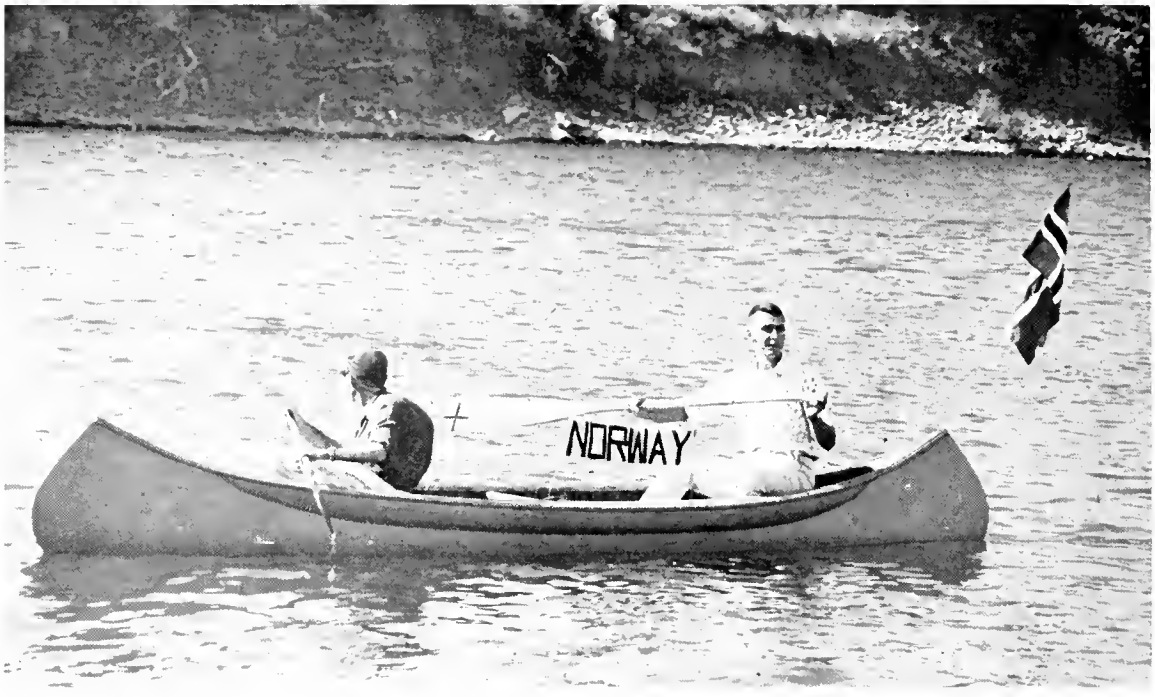
Yellowstone River:

The Yellowstone River is presently being floated in its entirety. The upper section from the Yellowstone Park line to Emigrant is the most hazardous and only experienced "river rats" should try it. The Yellowstone River from the Yellowstone Park boundary to "Pompey's Pillar" is one of Montana's famed Recreational Waterways and the upper river is nationally acclaimed for its fine fishing.

Boaters putting in at Livingston can take out at various points downstream. Between Livingston and Billings there are few hazards, though rocks should be watched for and a low diversion weir is located in the south channel of the river about four miles below Springdale.

Below Billings, boaters are advised to get local information on weirs, etc.

Each year an organized flotilla of happy boaters get together and float from Livingston to Billings in a large group outing. All



Recreationists come from far and wide to enjoy Montana's famed recreational waterways.
—Photo by Robert Rothweiler

persons are invited to take part in this annual event which occurs around early July. The Livingston Chamber of Commerce may be able to provide you with dates and other information.

A 26-page booklet, containing maps and other information about the Yellowstone River from Gardiner to the mouth of the Bighorn River, is available. The book entitled "Floating, Fishing and Historical Guide to Yellowstone State Waterway" may be purchased from Mr. Ray E. Burdge of 2047 Custer Avenue, Billings, Montana.

Western Montana:

Clark Fork River:

The Clark Fork River flows today, miraculously improved over the polluted condition it had been in for so many years. Its rejuvenation is a tribute to those whose efforts resulted in decreased pollution. Most of the Clark Fork has great beauty in its clear water and varied landscape.

The fishing in a few short years has become excellent. The highly desirable game fishes such as rainbow, Dolly Varden, brown trout and even native cutthroat trout have increased even in the higher reaches of the river. Whitefish, which are highly sensitive to pollution, are also on the increase. In the lower stretches of the river four to five pound trout are not rare.

The best time for the trips are after the heavy spring runoff. Late fall trips are especially good and are highly recommended. A major highway parallels part of the Clark Fork, otherwise, access to the river where boats can be put in or taken out are not developed and not well known. Many of the access routes are through private land and permission should be secured. The condition of the access areas vary from time to time due to weather conditions. Few of the areas are suited for launching a boat from a trailer. Before attempting a float trip on any stretch of the river one should inquire locally to ascertain the best access points and the condition of the stream at that time.

Northwest Montana:

Kootenai River:

The Kootenai is readily accessible throughout its length by way of Star Route 37 on U.S. Route 2. However, **there is one portion of the Kootenai River that all boatmen should stay away from! This is the Kootenai Falls area between Troy and Libby.**

Other floatable areas of the river flow through rugged, scenic country and provide excellent fishing for cutthroat, Dolly Varden,

and whitefish. Fishing with spoons, spinners or natural bait is the best bet in the early season while flies from size 10-14 work well in late summer. Many cutthroats and Dolly Varden are in the 3-pound and above weight class and provide exciting angling. This stream also has some fine ling and sturgeon fishing.

The construction of the Libby Dam and Reservoir which was begun in 1966 will eliminate about 50 miles of fine stream fishing and replace it with a reservoir

Main Flathead River above Flathead Lake:

The Flathead River and its three forks have long been recognized by Montanans for their value as free-flowing, productive rivers. The value these streams play in the recreational pattern of the area dictates their maintenance and preservation in its natural state. The Flathead River and its forks are members of Montana's Recreational Waterway System.

The main river above the lake is not hazardous and provides beautiful scenery as well as exceptional fishing for cutthroat trout, Dolly Varden and whitefish. In addition, certain areas of the main river provide excellent kokanee snag-fishing in the fall when these fish are on their spawning migrations. In the stretch between Columbia Falls and Flathead Lake there are a number of public boat launching areas. These are well spaced so that short or long float trips are possible.

In the main river as well as in its three tributaries the cutthroats will average about 14 inches in length and will weigh about one pound. During high water the best bets are various types of spoons, wobblers, spinning lures or natural bait. When the water drops and becomes clear, flies of the dark brown or black patterns will usually bring luck. The Dolly Varden caught in this stream usually run between 8-10 pounds. For the larger Dolly Varden, the medium to large size brass, copper, silver or red and white spoons are the consistent fish getters.

Middle Fork of Flathead
Above Bear Creek:

The middle fork of the Flathead River originates along the rugged Continental Divide south of Glacier National Park. This trip is hazardous and should be undertaken with caution and only by seasoned boaters! Much of the river winds through wild country where there are no roads and few people. Anglers will be rewarded with some excellent fishing.

Middle Fork of Flathead
Below Bear Creek:

The middle fork sports some pretty swift water and it would be advisable for the inexperienced not to try it on their own. Boats may be obtained from several guest ranches in the area. Fishing is best after mid-June when the snow melt has diminished. The scenery is beautiful and the crystal water is like that seen only in Montana.

North Fork of the Flathead:

The north fork of the Flathead originates in British Columbia and winds through scenery of unexcelled beauty. Several guest ranches rent boats in the area and there's plenty of good fishing.

South Fork of the Flathead:

On this stretch of water there are some bad spots between Black Bear and Meadow Creek. **Inquire locally before attempting a float trip.**

Part of the river is in a wilderness area and flows through beautiful and quite inaccessible country. Be certain you have the proper equipment and know-how to cope with any contingency, for you're on your own when you get into the hinterlands.

Swan River:

The Swan River is not hazardous but take along plenty mosquito repellent to insure comfort. Often there is quite a bit of downed timber and log jams on the Swan. Boaters with air-filled rafts will have to watch for snags. The axe is helpful, but many areas still require portage. A paved highway parallels the river, but one can seldom see the stream from the highway.

Central Montana:

Marias River:

An excellent float trip on this river would be from below Tiber Dam downstream to where the Marias meets the Missouri near Loma. There are many spots along the way which are ideally suited for picnicking and camping. Many of the access roads along this stretch of the river are on private land so permission should be secured before launching a boat.

There is excellent trout and sauger fishing in the Marias. Also sport fishing for goldeneye is rapidly increasing in popularity.

Dearborn River:

The best spot for a float trip on this river would be from the bridge which crosses the river (Highway 287) to the junction of the Dearborn and the Missouri. After midsummer the water becomes quite low in several places and several portages may be required. Both rainbow and brown trout are found in the river and may be expected to provide excellent angling.

Sun River:

The trip from the diversion dam below Gibson Reservoir down to Vaughn will provide excellent fishing until about mid-July. After this time, because of low water, float trips are not advised.

Smith River

Enter the river at the Fish and Game access near Fort Logan. From there float to the county road which runs between Cascade and Eden (it is just below the mouth of Hound Creek). This is an interesting and scenic float. Outstanding limestone cliffs with Indian paintings and caves add to the beauty of this near wilderness area. There are many excellent camping areas along the way. Care should be exercised, as there are several fences stretched across the stream; however, none are in dangerous locations.

There are several small creeks, including Rock and Tenderfoot, which enter the Smith River and whose rainbow and brown trout fishing have been acclaimed by many. Brown trout up to nine pounds have been taken.

Missouri River below Townsend:

Boaters may put into the Missouri River at the highway bridge below Holter Dam. A highway parallels the river for some distance. Small boats can be taken out at several points downstream from Holter Dam. The river level may rise or lower considerably in a short period of time, depending upon water releases from Holter Reservoir. Be prepared for a rather sudden rise in water so that you aren't caught on small islands or bars. Trout fishing is often excellent, but success will often depend on the amount of water being released by up-river dams.

The Missouri River from Fort Benton to Fred Robinson Bridge:

The Missouri River from Fort Benton to the Fred Robinson bridge, some 160 miles downstream, comprises the last of the wild Missouri. Of the entire length of this historic river, this is the only portion which still remains relatively as it was when white men first set eyes on it.

This part of the river is the third member of Montana's Recreational Waterway System. Although fishing for catfish and sauger is offered, the outstanding feature of this length of river is its scenic and historical nature. Persons who plan to take a trip through this area may get additional information by writing the Montana Fish and Game Department, Helena, Montana.

FOR INFORMATION FOR PLEASURE CRUISES AND FISHING FLOAT TRIPS, WRITE:

Western & Northwestern Montana:

A. L. Colby, Lakeside—boat trips on Flathead Lake.
Bill Smithson, Somers—Flathead Lake.
W. E. McClellan, Lakeside—cruiser trips on Flathead Lake.
Bill Marquardt, 327 3rd Ave. W., Kalispell—trips on main Flathead River and trips to local lakes.
Diamond R. Ranch, Box 146, Hungry Horse—south fork of Flathead River.
Dick Dehlbom, Columbia Falls—north fork of Flathead River.
O. W. Potter, Jr., Greenough—float trip for ranch guests only on Blackfoot River.

Southwestern Montana:

Charles T. Burgess—Deer Lodge.
Tony Schoonen—Whitehall.
Nick DeLeon—Melrose.
Charlie Habnkamp—Melrose.
Dan Pendergast, Jr.—Melrose.
Ray Rathie—Melrose.
Sylvan Donegan, Jr.—Twin Bridges.
A. E. Barnes—West Yellowstone.
Gary T. Bacon—1032 8th Ave.—Helena.
Walen F. Lilly, 2007 Sourdough Road—Bozeman.
Dan Bailey—Livingston.
Tom W. Morgan—Ennis.
Richard McGuire—Ennis.
John F. Scully—Ennis.
Jack McGowan—Ennis.
Ben Sheffield—Ennis.
Edward Maynard—Ennis.
Jerry Morgan—Ennis.
Irving Chase—Miner.
Merton Parks—Gardiner.
Dan Bailey—Livingston.
LeRoy Fatouros—Livingston.
Jim LaValley—Livingston.

Central and Northeastern Montana:

Bob Singer, Jordan—Missouri River cruises.
Dick Gregory—Fort Peck.
Lester Pippin—Glasgow.

This is the point where the Missouri River officially begins. The canoeists are at the juncture of the Jefferson and Madison Rivers. The Gallatin River flows in a short distance downstream.

WATER BASED STATE PARKS

Legend: T—toilet; TA—table; S—stove or fireplace; BL—boat launching possible; W—drinking water; *—development planned.

Location	Name of Park	Boating Area	Campground Capacity—Cars	Facilities
10 mi. s.w. of **Bigfork**	On Flathead Lake—Woods Bay	190 sq. mi.	....	T. TA. S. BL.
18 mi. s.w. of **Chester**	Tiber Reservoir Rec. Area	75 sq. mi.	50	T. TA. S. BL. W.
20 mi. s. of **Dillon**	Clark Canyon Res. Rec. Area	5,000 acres	60	T. TA. S. BL. W.
35 mi. s. of **Ft. Peck**	Rock Creek State Park On Ft. Peck Reservoir	756 acres	25	T. TA. S.
40 mi. s. of **Hamilton**	Painted Rocks Res. Rec. Area	500 acres	50	T. TA. S. BL.
29 mi. e. of **Harlowton**	Deadman's Basin Res. Rec. Area	8 sq. mi.	20	T. TA. S. BL.
20 mi. s.e. of **Helena**	Canyon Ferry Rec. Area	55 sq. mi.	150	T. TA. S. BL. W.
26 mi. n. of **Jordan**	Hell Creek State Park On Ft. Peck Reservoir	756 sq. mi.	25	T. TA. S. BL. W.
20 mi. w. of **Kalispell**	Bitterroot Lake State Park	5 sq. mi.	10	T. TA. S. BL. W.
20 mi. w. of **Kalispell**	Ashley Lake	3,224 acres	....	T. TA. S. W.
20 mi. s. of **Kalispell** on Flathead Lake	West Shore State Park	190 sq. mi.	20	T. TA. S. BL. W.
65 mi. n. of **Lewistown**	James Kipp State Park	100 mi. Missouri R.	30	T. TA. S. BL. W.
25 mi. n.e. of **Malta**	Nelson Res. Rec. Area	7 sq. mi.	20	T. TA. S.
15 mi. n. of **Polson** on Flathead Lake	Flathead Lake State Park	190 sq. mi.	50	T. TA. S. BL. W.
12 mi. e. of **Polson** on Flathead Lake	Finley Point State Park	190 sq. mi.	12	*
20 mi. n. of **Polson** on Flathead Lake	Yellow Bay State Park	190 sq. mi.	12	T. TA. S. BL. W.
30 mi. n.w. of **Polson**	Lake Mary Ronan	3,800 acres	15	T. TA. S.
2 mi. w. of **Thompson Falls**	Thompson Falls State Park	7 acres	15	T. TA. S. BL. W.
1 mi. n. of **Townsend**	Missouri River		....	TA. *
5 mi. n.e. of **Three Forks**	Missouri River Hdqtrs. State Monument	Missouri River	10	T. TA. S. BL. W.
½ mi. n. of **Virgelle**	Missouri River Coal Banks Landing	Missouri River	....	*
3 mi. w. of **Whitefish**	Whitefish Lake State Park	10 sq. mi.	20	T. TA. S. W.

FISHING ACCESS AREAS

PROVIDED BY THE MONTANA FISH AND GAME DEPARTMENT

*—Indicates areas which are not developed at this time, February, 1967. However development work is anticipated during the coming summer months.

Legend: T—toilet; TA—table; S—stove or fireplace; BL—boat launching possible; W—drinking water.

Location From Town	Name of Area	Facilities	Lake Area
Absarokee—Town	Stillwater River	T.	
18 mi. s.w. of **Absarokee**	Stillwater River, Castle Rock	T. TA. S.	
19 mi. s. of **Absarokee**	Stillwater River, Moraine	*	
11 mi. s. of **Absarokee**	Stillwater River, Rosebud Isle	T.	
5 mi. s. of **Absarokee**	Stillwater River, Cliff Swallow	T. TA. S.	
20 mi. s. of **Anaconda**	Big Hole River, Sportsman's Park	T. TA. S.	
15 mi. w. of **Anaconda**	Georgetown Lake		2,800 acres
12 mi. w. of **Augusta**	Bean Lake	T. TA. S. BL.	268 acres
20 mi. n.w. of **Baker**	Rush Hall Reservoir	*	
4 mi. s.w. of **Belgrade**	West Gallatin R., Cameron Bridge	T. TA. S.	
5 mi. n. of **Bigfork**	Flathead R., Sportsman's Bridge	T. TA. S.	
Town of **Bigfork**	Flathead Lake, River's End	BL.	
6 mi. e. of **Bigfork**	Loon Lake		57.3 acres
10 mi. s. of **Bonita**	Rock Creek—Welcome Creek	T.	
8 mi. s. of **Bonita**	Rock Creek—Tamarack Creek		
25 mi. w. of **Bonner**	Blackfoot Dr., Nine Mile Prairie	T. TA. S.	
6 mi. w. of **Big Timber**	Yellowstone River, Grey Bear	T. TA. S.	
14 mi. w. of **Brady**	Arod Lake	T. TA. S.	
12 mi. s. of **Cameron**	Madison River, Varney Bridge	T.	
1 mi. s. of **Cardwell**	Jefferson River	*	
1 mi. e. of **Columbus**	Yellowstone River	*	
5 mi. s. of **Columbus**	Stillwater River, Swinging Bridge	T.	
6 mi. s. of **Columbus**	Stillwater River, White Bird	T. TA. S.	
1 mi. s. of **Columbus**	Stillwater River, Fireman's Point	T.	
4 mi. s. of **Dillon**	Barrat's Campground	T. TA.	
Town of **Emigrant**	Yellowstone River	T. TA. S.	
14 mi. s.w. of **Emigrant**	Daily Lake	*	107 acres

The canoe and kayak are favored by many for river floating. Most floaters who travel by manpower plan the trips for downriver only as upriver travel by paddling is tough, especially during high water. The photographer who returned for a camera to this point can verify this.

*—Indicates areas which are not developed at this time, February, 1967. However development work is anticipated during the coming summer months.

Legend: T—toilet; TA—table; S—stove or fireplace; BL—boat launching possible; W—drinking water.

Location From Town	Name of Area	Facilities	Lake Area
4 mi. n.e. of **Ennis**	Madison River, Valley Garden	T. TA. S.	
4 mi. s. of **Ennis**	Madison River, Burnt Tree Hole	T.	
6 mi. s. of **Ennis**	Madison River, Eight Mile Ford	T.	
1 mi. s. of **Ennis**	Madison River, Ennis	T. TA. S. W.	
8 mi. n. of **Ennis**	Meadow Lake (Ennis Lake)	T.	3,800 acres
6 mi. n.w. of **Eureka**	Carpenter Lake	T. TA. BL.	91.4 acres
7 mi. n.w. of **Eureka**	Sophie Lakes	T. TA. S.	232 acres
4½ mi. s.w. of **Fortine**	Loon Lake	*	100 acres
5½ mi. s.w. of **Fortine**	Marl Lake	*	200 acres
3 mi. n. of **Fort Peck**	Fort Peck Dredge Cuts	T. TA. BL.	
12 mi. s. of **Fromberg**	Bluewater Hatchery	T. TA. W.	
30 mi. s. of **Gallatin Gateway**	Gallatin River and Ramshorn Lake	*	
1 mi. e. of **Glendive**	Hollecker Pond	T. TA.	10 acres
2 mi. s. of **Glen**	Big Hole River, Glen	*	
20 mi. w. of **Harlowton**	Musselshell River, Selkirk	T. TA. S. W.	
12 mi. s. of **Havre**	Bear Paw Lake	T. TA. S.	
8 mi. e. of **Harrison**	Harrison Lake	T. TA. S. BL.	868 acres
25 mi. s.w. of **Helena**	Park Lake	*	35 acres
28 mi. s. of **Helena**	Tizer Lakes	*	20 acres
6 mi. s.w. of **Hobson**	Ackley Lake	T. TA. BL.	241 acres
2 mi. e. of **Kalispell**	Flathead River, Old Steel Bridge	T. BL.	
10 mi. n. of **Kalispell**	Whitefish River	*	
10 mi. w. of **Kalispell**	Smith Lake	*	15 acres
10 mi. n.e. of **Kalispell**	Flathead River Pressentine Bar	*	
5 mi. n.e. of **Kalispell**	Flathead River Reserve Dr.	*	
5 mi. n. of **Lewistown**	Lower Carter's Pond		15 acres
6 mi. n. of **Lewistown**	Upper Carter's Pond	T. TA. S.	15 acres
5 mi. n.e. of **Lewistown**	Spring Creek	*	
40 mi. s.e. of **Libby**	Crystal Lake	*	178 acres
8 mi. s. of **Livingston**	Yellowstone River—Mallard's Rest	T. TA. S. W.	
1 mi. s. of **Livingston**	Yellowstone River—Paradise	T. TA. S.	
12 mi. e. of **Livingston**	Yellowstone River—Sheep Mountain	T. TA. S.	
10 mi. n. of **Logan**	Missouri River—Fairweather	*	
2 mi. e. of **Manhattan**	Gallatin River, Four Corners	T. TA. S.	38 acres
10 mi. s. of **McLeod**	Boulder River—Natural Bridge	T.	
15 mi. s.w. of **Melrose**	Browne's Lake		
12 mi. s. of **Miles City**	Tongue River	T.	
2 mi. w. of **Miles City**	Brannum Lake	T. TA. S.	40 acres
.5 mi. n.e. of **Nye**	Stillwater River—Buffalo Jump	T. TA. S.	
4 mi. w. of **Nye**	Stillwater River—Limestone	*	
8 mi. s. of **Ovando**	Blackfoot Dr.—Cedar Meadow	*	
8 mi. w. of **Ovando**	Blackfoot Dr.—Cottonwood Creek	*	
8 mi. w. of **Ovando**	Upsata Lake	T. TA. S. BL.	85.4 acres
15 mi. w. of **Ovando**	Clearwater Crossing	T. TA. S.	
3 mi. w. of **Ovando**	Monture Creek	T. TA. S.	
8 mi. n.w. of **Ovando**	Blackfoot River—Box Canyon	*	
12 mi. w. of **Ovando**	Blackfoot River—River Junction	T. TA. S.	
4 mi. s. of **Ovando**	N. Fork Blackfoot R.—Harry Morgan	*	
35 mi. n.w. of **Polson**	In Flathead Lake—Cedar Island	*	190 sq. mi.
30 mi. n.w. of **Polson**	In Flathead Lake—Juniper Beach	*	190 sq. mi.
Between **Roberts** & **Red Lodge**	Rock Creek—Aspen Park	*	
Between **Roberts** & **Red Lodge**	Rock Creek—Beaver Lodge	T.	
Between **Roberts** & **Red Lodge**	Rock Creek—Bull Springs	*	
Between **Roberts** & **Red Lodge**	Rock Creek—Horsethief Station	*	
Between **Roberts** & **Red Lodge**	Rock Creek—Water Birch	T.	
12 mi. n. of **Saco**	Cole Ponds	T. TA. S.	15 acres
12 mi. s. of **Seeley Lake**	Harper Lake	T. TA. S. BL.	17.9 acres
15 mi. s.w. of **Sidney**	Gartside Lake	*	35 acres
19 mi. e. of **Shelby**	Devon Reservoir	*	
12 mi. s. of **Three Forks**	Madison River—Greycliff	T.	
3 mi. w. of **Thompson Falls**	Noxon Rapids	T. BL.	
5 mi. s. of **Townsend**	Missouri River	*	
4½ mi. s.e. of **Troy**	Savage Lake	*	108 acres
5 mi. s. of **Whitehall**	Jefferson River—Parrot Castle	*	
5 mi. s.w. of **Whitefish**	Blanchard Lake	T. TA. S.	147 acres
2 mi. w. of **Whitefish**	Skyles Lake	*	39 acres
1 mi. s. of **Whitetail**	Durand Reservoir	T. TA. S.	
18 mi. n. of **White Sulphur Sprgs.**	Smith River	*	272 acres
20 mi. e. of **White Sulphur Sprgs.**	Whitetail Reservoir	*	25 acres
3 mi. w. of **Willow Creek**	Jefferson River—Williams Bridge	*	

Other Areas

LOCATION	NAME	DOCK NAME	BOATING AREA	Ramp Charges	Dock Rental	Boat Rental	Motor Rental	Hoist	Gas & Oil	Campground Capacity	Picnic Tables	Motels	Hotels	Dining	Housekeeping Cabins	Stores	Trout	Bass	Other
18 Mi. W. Anaconda	Georgetown Lake	Denton's Point	5 sq. mi.	X	X	X	X		X	400 cars	X	X		X	X	X	X	X	
18 Mi. W. Anaconda	Georgetown Lake	Eccleston's Bay (Also 5 Public Access Areas)	5 sq. mi.			X			X	50 cars					X		X		
20 Mi. W. Anaconda	Echo Lake	Echo Lake Lodge	300 acres	Natural		X						X	X				X		
15 Mi. N.W. Augusta	Willowcreek Reservoir		2 sq. Mi.	Natural													X		
4 Mi. E. Babb	Duck Lake		4 sq. mi.	Free						30 cars							X		
5 Mi. N. Bigfork	Echo Lake			Free													X		
18 Mi. S.E. Bigfork	Swan Lake			Natural		X				X		X			X	X	X	X	X
20 Mi. N. Big Timber	Glass-Lindsey Reservoirs		200 acres	X													X		X
Bigfork	Flathead Lake	Bigfork Public Beach	190 sq. mi.	Free	X	X	X			X		X	X	X	X	X	X	X	X
9 Mi. S. Bozeman	Hyalite Lake		220 acres	Natural						X							X		
45 Mi. S. Busby	Tongue River Reservoir		6 sq. mi.	Natural														X	X
24 Mi. N. Choteau	Bynum Reservoir		6 sq. mi.	Natural													X		
24 Mi. S.W. Choteau	Pishkin Reservoir		58 sq. mi.	Natural													X		
38 Mi. N.W. Choteau	Teton River		980 acres	Free						75 cars							X		
19 Mi. S.E. Chester	Tiber Reservoir	V.F.W.	75 sq. mi.	Free	X	X				50 cars	X						X		
20 Mi. S.W. Colstrip	Flint Creek Reservoir		440 acres	Natural															
24 Mi. N.W. Conrad	Lake Francis		9 sq. mi.	Free		X	X			X		X			X	X	X		X
30 Mi. S.W. Conrad	Nilan Reservoir		600 acres	Natural													X		X
7 Mi. N. Ennis	Ennis Lake		6 sq. mi.	Natural		X	X			50 cars	X						X		X
20 Mi. S.E. Eureka	Bull Lake	Bull Lake Resort	117 acres	Free	X	X					X								
16 Mi. S.E. Eureka	Dickey Lake	Dickey Lake	622 acres	Free	X					50 cars	X				X		X		X
6 Mi. E. Eureka	Glenn Lake	Glenn Lake	334 acres	Free	X					25 cars	X						X		X
10 Mi. E. Flathead Lake	Lake Mary Ronan	Camp Tuffet & others	1200 acres	Natural		X			X	X					X		X		
Forsyth	Yellowstone River		Yellowst. R.	Free						30 cars	X	X	X	X					X
Fort Benton	Missouri River	City Dock	25-300 mi.	Free					X		X	X	X	X		X			X
Below Ft. Peck Dam	Missouri River	Aqua Boat V Club	5 sq. mi.											X					
35 Mi. S.W. Fort Peck	Fort Peck Reservoir	Pines Recreation Area	756 sq. mi.	Natural						X	X								X
Fort Peck Dam	Fort Peck Reservoir	Johnny's Marina	756 sq. mi.	Free	X	X	X			X					X		X		X
Glacier National Park	St. Mary's Lake		10 sq. mi.	Free		X	X		X	X	X	X		X	X	X	X		
Glacier National Park	Bowman Lake		4 sq. mi.	Natural						X							X		
Glacier National Park	McDonald Lake	Apgar	10 sq. mi.	Free		X	X		X	X	X	X	X	X	X	X	X		X
Glacier National Park	Two Medicine Lake	Two Medicine	600 acres	Free						X	X	X	X	X	X	X	X		
Glacier National Park	Sherburne Lake		4 sq. mi.	Natural								X	X	X	X	X	X		
Glacier National Park	Swift Current Lake		300 acres	Free						X	X	X	X	X	X	X	X		
Great Falls	Missouri River	Municipal Docks	20 miles	Free						25 cars	X	X	X	X	X	X	X		
14 Mi. N.W. Havre	Fresno Reservoir	Fresno Dam	22 sq. mi.	X	X		X			X	X	X		X	X	X	X		X
15 Mi. S.W. Hamilton	Lake Como		936 acres	Natural						X							X		
23 Mi. E. Helena	Canyon Ferry Reservoir	Cave Bay	55 sq. mi.		X	X			X	X	X			X	X	X	X		X
19 Mi. E. Helena	Canyon Ferry Reservoir	Yacht Basin	55 sq. mi.	X	X	X	X		X	X				X	X	X	X		X
15 Mi. N.E. Helena	Hauser Reservoir	Lakeside Docks	10 miles	X	X	X	X		X	25 cars	X			X	X		X		X
16 Mi. N. Helena	Missouri River	Gates of Mountains	20 miles	X	X			X	X	X	X			X	X	X	X		X
Hinsdale	Milk River	Hinsdale Park	30 miles	Free						100 pers.	X	X		X	X	X			X
23 Mi. N. Hot Springs	Hubbart Reservoir		700 acres	Natural													X		
11 Mi. S.W. Hot Springs	Rainbow Lake	Grange Camp	80 acres	Natural						X	X						X		
11 Mi. S.W. Hot Springs	Dry Forks Reservoir		200 acres	Natural							X					X	X	X	X
Hungry Horse	Hungry Horse Reservoir	Lost Johnny Camp	36 sq. mi.	Natural						15 cars	X	X		X		X	X	X	X
Rte. 10 Idaho Line	Cahinet Reservoir		12 sq. mi.	Natural						X							X	X	X
9 Mi. S. Kalispell	Flathead Lake	Sail Boat Inn	190 sq. mi.	X	X	X	X			X		X		X		X	X	X	X
14 Mi. S. Kalispell	Flathead Lake	Elks Camp	190 sq. mi.		X					X	X				X	X	X	X	X
40 Mi. W. Kalispell	Thompson Lakes		6 sq. mi.	Natural															
45 Mi. W. Kalispell	Island Lake		1000 acres	Natural											X		X	X	
10 Mi. W. Kalispell	Smith Lake		1200 acres	Natural													X	X	X
8 Mi. E. Kalispell	Lake Blaine	Lake Blaine Resort	400 acres	Natural		X			X			X			X		X	X	X
30 Mi. W. Kalispell	McGregor Lake	Boisvert's & Paradise Lodges	3 sq. mi.	Natural					X	X	X			X	X	X	X		X
Lakeside	Flathead Lake	Service Boat Co.	190 sq. mi.	Free	X				X				X	X	X	X	X	X	X

LOCATION	NAME	DOCK NAME	BOATING AREA	Ramp Charges	Dock Rental	Boat Rental	Motor Rental	Hoist	Gas & Oil	Campground Capacity	Campground	Motels	Hotels	Dining	Housekeeping Cabins	Stores	Trout	Bass	Other
Along #287 & Lakeshore	Hebgen Lake	Forest Service Land	20 sq. mi.	Natural													$		
6 Mi. S. Lakeside	Flathead Lake	Table Bay	190 sq. mi.	X							X								
Town of Lakeside	Flathead Lake	City of Lakeside & Kolby's	190 sq. mi.	X	X	X	X		X			X		X	X	X	X	X	X
20 Mi. S. Lewistown	Crystal Lake									100 pers.							X		
41 Mi. E. Libby	Horseshoe Lake		250 acres	Free						15 cars	X						X	X	X
37 Mi. W. Libby	Bull Lake	Halfway House	4 sq. mi.	Free	X	X	X		X	200 cars	X			X	X	X	X	X	X
92 Mi. E. Libby	Crystal Lake	Happy's Inn	350 acres	Free	X	X	X		X	25 cars	X						X	X	X
35 Mi. E. Libby	Loon Lake		400 acres	Free	X					35 cars	X						X		X
45 Mi. E. Libby	Lower Thompson Lake		2 sq. mi.	Free	X	X				35 cars	X						X		X
45 Mi. E. Libby	Middle Thompson Lake	Meadow Mountain Lodge	3 sq. mi.	Free	X					100 cars	X				X		X	X	X
45 Mi. E. Libby	Upper Thompson Lake		2 sq. mi.	Free	X					25 cars	X						X	X	X
15 Mi. E. Lima	Lima Reservoir	Lima Dam	20 sq. mi.	X	X	X					X						X		
1 Mi. W. Lonepine	Lonepine Reservoir		200 acres	Natural													X		X
1 Mi. S.E. Martinsdale	Martinsdale Reservoir		500 acres	Natural													X		
15 Mi. W. Martinsdale	Harris Lake		500 acres	Natural													X		
Miles City	Cook Lake	City Dock	5 acres	Free							X	X	X	X		X	X		X
Miles City	Yellowstone River			Free						100 cars									X
Jnct. Missouri & Sun Rivers	Missouri River	Electric City Boat Club	20 miles	Free							X	X	X	X	X	X	X	X	X
8 Mi. S.W. Ovando	Brown's Lake	Public Campground	500 acres	Free							X						X		
Polson	Flathead Lake	Koss Boat Co.	190 sq. mi.			X		X	X			X	X	X		X	X	X	X
¼ Mi. E. Polsoo	Flathead Lake	Stan Craft Marina	190 sq. mi.	Free				X	X			X	X	X	X	X	X	X	X
8 Mi. N. Polson	Flathead Lake	K.O.A.	190 sq. mi.	X	X				X		X					X	X	X	X
15 Mi. N. Polson	Flathead Lake	K.O.A.	190 sq. mi.	X	X				X		X					X	X	X	X
10 Mi. N. Polson	Flathead Lake	Walstad Park	190 sq. mi.	Free							X						X	X	X
25 Mi. N.W. Red Lodge	Cooney Reservoir		862 acres	Natural					X		X			X			X		
9 Mi. N. Seeley Lake	Rainey Lake	Public Campground	60 acres	Free													X		
10 Mi. S. Seeley Lake	Salmon Lake		273 acres	Free										X	X	X	X	X	X
10 Mi. S.W. Seeley Lake	Placid Lake		1100 acres	Natural											X		X	X	X
Seeley Lake	On Route 209	Public Campground	3 sq. mi.	X								X	X	X	X	X			
10 Mi. S. Seeley Lake	Salmon Lake			Free										X	X	X	X	X	X
15 Mi. N. Seeley Lake	Lindberg Lake	Hickey Lodge	3 sq. mi.	Natural		X			X	X	X					X	X	X	X
6 Mi. N. Seeley Lake	Inez Lake	Public Campground	300 acres	Free							X	X			X		X		X
15 Mi. N. Seeley Lake	Holland Lake	Woodhouse	1000 acres	Natural		X			X	X			X	X	X		X		X
7 Mi. N. Seeley Lake	Alva Lake	Public Campground	300 acres	Free							X						X		X
4 Mi. S. Somers U.S. 93	Flathead Lake	Stan Craft Docks	190 sq. mi.	Free	X			X	X			X			X	X	X	X	X
1 Mi. S. Somers U.S. 93	Flathead Lake	Bigfork Public Beach	190 sq. mi.	Free	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Rte. 2 Thompson Falls-Noxon	Noxon Reservoir	Trout Creek		Natural		X	X			X	X	X	X			X	X		
Rte. 2 Thompson Falls-Noxon	Noxon Reservoir	Thompson Falls		Natural		X	X			X	X	X	X	X	X	X	X		
Thompson Falls	Thompson Falls, Reserv.	Thompson Falls	7 miles	Natural	X	X		X	X	X	X	X	X	X	X	X	X		
30 Mi. S.E. Troy	Spar Lake		320 acres	Free	X					45 cars	X						X		
6 Mi. S.E. Troy	Savage Lake		80 acres	Free	X					25 cars	X						X		
14 Mi. N. Troy	Kilbrennan Lake		225 acres	Free	X	X	X		X	50 cars	X				X		X		X
Waterton National Park	Waterton Lake		6 sq. mi.	Free						X	X					X	X		
13 Mi. N.W. W. Yellowstone	Hebgen Lake	The Narrows	20 sq. mi.	X	X	X	X		X						X		X		
14 Mi. N.W. W. Yellowstone	Hebgen Lake	Stefflers	20 sq. mi.	X	X	X	X		X						X		X		
15 Mi. N.W. W. Yellowstone	Hebgen Lake	Hebgen Lake Lodge	20 sq. mi.	X	X	X	X		X		X				X	X	X		
18 Mi. N.W. W. Yellowstone	Hebgen Lake	Madison Arm Resort	20 sq. mi.	X	X	X	X		X		X				X	X	X		
40 Mi. W. W. Yellowstone	Elk Lake		480 acres	Natural											X		X		
30 Mi. N.W. W. Yellowstone	Cliff Lake		4 sq. mi.	Natural						X							X		
35 Mi. N.W. W. Yellowstone	Wade Lake		1400 acres	Natural						X					X		X		
Whitefish	Whitefish Lake	City Beach	10 sq. mi.	Free	X	X	X		X		X	X	X	X	X	X	X		
20 Mi. W. Whitefish	Tally Lake		3 sq. mi.	Natural													X		
9 Mi. N.E. White Sulph. Spgs.	Lake Sutherlin		500 acres	Natural													X		
6 Mi. E. Wolf Creek	Holter Reservoir		6 sq. mi.	Free													X		
Wolf Point	Missouri River	Bridge Park	20 sq. mi.	Free						500 cars	X	X	X	X		X	X		X
Yellowstone Park	Yellowstone Lake	Fishing Bridge	139 sq. mi.	Free	X	X				400 cars	X	X	X	X		X	X		X
Yellowstone Park	Yellowstone Lake	West Thumb	139 sq. mi.	Free	X	X				100 cars			X	X		X	X		
Yellowstone Park	Yellowstone Lake	Lake Hotel	139 sq. mi.	Free	X	X					X	X	X	X	X	X	X		

MONTANA GAME TROPHIES

By Harley Yeager

When considering an animal for a possible trophy remember that both symmetry and mass of antlers or horns are important.

Did you shoot a trophy animal last hunting season? How did it score according to Boone and Crockett ratings? Was your trophy the biggest one ever taken in Montana?

The Boone and Crockett Club is accepted as the authority on methods of scoring North American game trophies and for maintaining official records for North America. The methods of scoring horned and antlered animals are heavily weighted by symmetry as well as mass and length of horns or antlers. Final measurements, when computed, give a numerical score. Some of the scores needed to get into trophy classes are:

Minimum Scores Needed for Trophy Classes —Boone and Crockett Club

Bear—Black	19	
Grizzly	23	
Bison	110	
Cougar	14	
Deer: Mule—Typical	185	
Non-Typical	185:40 =	225
Whitetail-Typical	160	
Non-Typical	160:20 =	180
Rocky Mountain Goat	49	
Wyoming Moose	150	
Pronghorn	80	
Wapiti	360	
Big Horn Sheep	175	

Let's take a look at how Montana trophies have done according to the latest edition of Records of North American Big Game. This record book compiled by the Boone and Crockett Club includes trophies taken through the 1963 hunting season.

Trophies scored by antler size:

In the typical whitetail deer category, nine of 385 trophies listed have been taken in Montana. The number four ranking buck scoring 191⅝ points (one point equals one inch of antler measurement) was taken in Flathead county in 1963. A buck taken in Minnesota scoring 202 points is ranked number one.

Ten of 154 nationally ranking non-typical white-tail bucks have been shot in Montana. The number one Montana head was taken in Flathead county in 1960. This fine trophy scoring 241⅞ ranks sixth nationally. The North American record non-typical white-tail buck scoring 296 was killed in Texas in 1892.

Montana has 29 of 414 nationally ranked typical mule deer trophies. The number one head scoring 217 was shot in Wyoming. Montana's number one head, scoring 196-4/8 and ranking 84th, was shot in 1959 near the Flathead River.

The top non-typical mule deer killed in our state scores 275⅝ points, good enough for 19th place by Boone and Crockett standards. This trophy was taken in the Ruby Mountains in 1960. Montana has 16 of the 216 nationally ranked trophies in this category. The North American record non-typical mule deer which scored 355 2/8 was taken in 1926 from Alberta.

Fifty-nine of two hundred thirty-seven wapiti (elk) listed by the Boone and Crockett Club have been killed in Montana. A huge bull killed in the Gravelly Mountains in 1958 is the top Montana trophy elk and ranks third nationally with a score of 419 4/8. This trophy was awarded the Sagamore Hill Medal in 1959. The Sagamore Hill Medal is given only when there is an outstanding trophy worthy of great distinction, in this case the largest bull killed during the 20th century. The number one wapiti killed in Colorado in 1915, was not reported until recently, but scored a whopping 442 3/8 points.

The Wyoming or Shiras moose is another game category where Montana trophies have done well. Of the 57 trophies listed in the 1964 of Records of North America Big Game, 15 have been taken in Montana. Our top state trophy ranks fifth nationally with 195 1/8 points and was shot near Red Rock Lakes in 1952. The North American record Shiras moose scoring 205 4/8 points was shot in Wyoming in 1952.

Trophies scored by horn size:

Leading the list of Montana's 28 record bighorns is a 45-inch curl ram shot in 1961. This fine trophy is tied for eleventh place nationally with a score of 196 5/8. It is not surprising to find that this ram was taken out of the Sun River area. This area, located 70 miles west of Great Falls, has produced 16 of 251 nationally ranked bighorns. The North American record bighorn was killed in Alberta in 1924 and scores 207 2/8.

Although our state has excellent mountain goat hunting, only seven of 149 trophy goats listed by the Boone and Crockett Club have been shot within Montana boundaries. A billy with 10 4/8 and 10 2/8 inch horns scoring 50 points is the top state trophy goat. This billy was killed near the Flathead River in 1957 and ties for 89th place nationally. A male killed in British Columbia in 1949 leads the list of trophy goats with 56 6/8 points. This fine trophy has 12-inch horns. There has been only one other goat reported with longer horns, a nanny killed prior to 1916. When heads were scored by length alone, this nanny was in first place with 12 1/8 and 12 4/8 inch horns. With symmetry and massiveness also counting in the final score, this nanny takes her rightful place in the record book, tied for 52nd place.

The leading Boone and Crockett pronghorn from our state scores 85 6/8 and is tied

for 23rd place. This trophy buck with 17 4/8 and 17 2/8 inch horns was killed in Carbon county in 1953. A buck killed in Forsyth in 1961 with both horns measuring 17 5/8 inches is the longest horned pronghorn reported killed in Montana. Not being quite as massive in horn circumference as the Carbon county buck, the Forsyth buck scores 85 and ties for 33rd place in Boone and Crockett. The number one pronghorn of all times killed in 1878 in Antelope Valley, Arizona scores 101 6/8 points and leads the second place buck by over ten points.

The last trophy species of the horned animals found in Montana is the bison. This huge animal has not been hunted as a game species in recent years. The largest Boone and Crockett bison from Montana was picked up near Hell Roaring Creek in 1945. Scoring 131 6/8, this bull ranks number six in Boone and Crockett. Eight other buffalo of the 99 listed as nationally ranked trophies, have been found or shot in Montana. One of these eight scoring 122 2/8 was shot in the Absarokee Wilderness area in 1953 by a bow and arrow hunter and ties for 26th place nationally.

Trophies scored by skull size:

Although considered a predatory animal in Montana, the mountain lion is listed by the Boone and Crockett club as a trophy species. Twenty-one of 191 trophy cougars listed in Records of North American Big Game have been shot in Montana. Leading the list of nationally ranked cougars are two large males from Colorado and Alberta scoring 15 12/16. Right behind these cougars is a trophy from Darby, Montana, scoring 15 11/16 and tying for third place. This mountain lion was killed in 1953.

Undoubtedly one of the most under-harvested game animals in Montana is the black bear. Only four of 1964 black bears listed by the Boone and Crockett Club as of 1963 have been shot in Montana. The top state entry is a male taken in 1956 from Madison county. This trophy measures 20 11/16 by skull size and ties for 56th place. The North American record black bear measures 21 15/16 and was shot in Wisconsin in 1953.

One of the most highly prized trophies in Montana is the grizzly bear. Eight of 130 trophy grizzlies listed by the Boone and Crockett Club have been killed in Montana. Our top state entry is tied for 13th place with a score of 25 9/16. However, four record book grizzlies have been taken in Montana since 1960. The North American record grizzly scoring 26 10/16 was taken in British Columbia in 1954.

That old saying, "records are made to be broken," has once again been proven true. Since the publication of the 1964 edition of Records of North American Big Game, world records for six big game animals have been broken. The typical white-tail deer record has been broken twice with a buck taken in Minnesota coming out on top with a score of 206 5/8.

A Columbian blacktail deer scoring 170 1/8 has also established a new record. This game species found principally along the west coast is not found in Montana.

A ram killed in 1911 in Alberta but not scored until the 1965-66 Boone and Crockett biennial competition is the new record holder for the bighorn sheep category. This trophy scores 208 1/8 compared to the old record of 207 2/8. Honorable mention in the same category was won by a Montana ram killed in the Sun River Canyon scoring 186 1/8.

The national record for jaguar was also broken with a score of 18 7/16. This cat was killed in Mexico in 1965, but, like the Columbian blacktail deer, is not found in Montana.

The North American record for black bear is now 22, beating the old record by 1/16 of an inch. This record bear was killed in Colorado in 1964.

A new North American record for cougar has been established with a score of 16 points. This trophy was killed in Utah in 1964. Honorable mention was won by a cougar killed in Mineral county, Montana in 1964 with a score of 15 6/16.

Most of Montana's Boone and Crockett trophies have been shot within the last ten years. During this period of time, total numbers of big game animals killed in the Treasure State have risen to record heights. It's a sure bet that trophy heads will be taken from our state this year and in the years to come. Truly, Montana is a land of quality and quantity hunting.

PHOTO BY JERRY ATWELL

COYOTE

"Every plainsman in the west has heard and learned to love your song, and every dweller in the west that is to be will know it well, for still it sounds from the level buttes in the early dark . . . " So wrote Ernest Thomas Seton in the late 1920's. To a large degree, his prediction still stands. The westerner can still hear, but not as often as in Seton's time, the lonesome song of the coyote.

The name "coyote" as we know it, apparently originated with the Aztec Indians and was passed on, with considerable modifica-

tion, by the Spaniards. His Latin or scientific name is **Canis latrans,** but he's been known locally by such names as the prairie wolf, brush wolf, and cased wolf. The name "cased wolf" was an old trade name. The coyote hides were cured cased—that is, they were peeled off the carcasses like a glove during skinning. In contrast, an open pelt was one which had been cut open along the belly and could be spread out flat. This is the way the true wolves were pelted out. Lewis and Clark referred to the coyote as the "small wolf", and "burrowing dog of the plains".

Coyotes are small animals, probably smaller than they appear to most persons. They average less than 30 pounds and are only about 4 feet long from pointed nose to tip of the bushy tail.

Mating may take place from February through April and the gestation period is from 60 to 65 days. Denning is usually in a burrow of some sort. Litters average around 6 pups, though the number may vary considerably.

Both the male and female care for the puppies which are born with their eyes closed just like dog pups. Like dog puppies, also, the young balls of fur are a frolicsome lot. Pups will start coming out of the den when about 3 weeks old, but they don't actually abandon their birthplace for some 8-10 weeks.

The range of the coyote has actually been extended in historical times, in spite of man's constant warfare upon it. They were unknown in Alaska before the 1898 gold rush, but now range throughout the greater part of Alaska and Canada, too. In the U.S. they are found in all but the more eastern states. Even in these eastern and southeastern states, an occasional coyote is seen or killed. It's probable, however, that the coyotes occasionally found in the eastern states are released pets, or ones which have been transported there for some reason. Coyotes range through Mexico also.

Coyotes are not fussy eaters. Nearly anything that can be digested is gobbled up in their constant search for food, including fruits, berries and insects. In a Nevada study on coyote foods, their diets consisted of about 1/3 rabbits, 1/4 carrion, 1/5 rodents, and the rest divided among animals of other kinds, including some domestic stock. In Yellowstone Park, Adolph Murie noted that rodents

Coyotes have been the targets for every type of trap, poison, and weapon that man can conceive. Despite the continuous onslaught, the tough and cunning coyote has not only survived, but has extended its range in historical times.

Two coyotes share, somewhat grudgingly, a meal at a carcass. During the winter, carrion may make up a major portion of the diet.

—Photo by Jerry Atwell

of various kinds were the important food items during the summer, and in the winter carrion was the "staff of life". Murie noted considerable starvation also in parts of Yellowstone Park during the winter of 1936 and 1937. He suggests that starvation, or near starvation, may sometimes have considerable effect on coyote reproduction.

Although Lewis and Clark observed that coyotes were seldom, if ever seen alone, and were always seen in packs usually of 10 or 12, it is not unusual to see lone coyotes now. They are sociable animals, however, and may be seen in pairs or groups. Pairs are often male and female mates and groups are often family groups.

The distances that coyotes range depends a lot on the availability of food. If food comes easily, the areas they move about in will likely be small. If, on the other hand, pickings are slim, then they are forced to cover a larger hunting area or may move out of an area entirely.

The fact that the coyote has not only survived but has actually extended its range under the constant persecution of man, is evidence of its cunning and toughness. Few other mammals have the tenacity to life and the ability to survive physical damage and pain.

Great mass poisonings were begun for the killings of wolves and coyotes in the 1850's and the coyote is still a target for poisons, the gun, traps, and about every other lethal device that can be mustered against him.

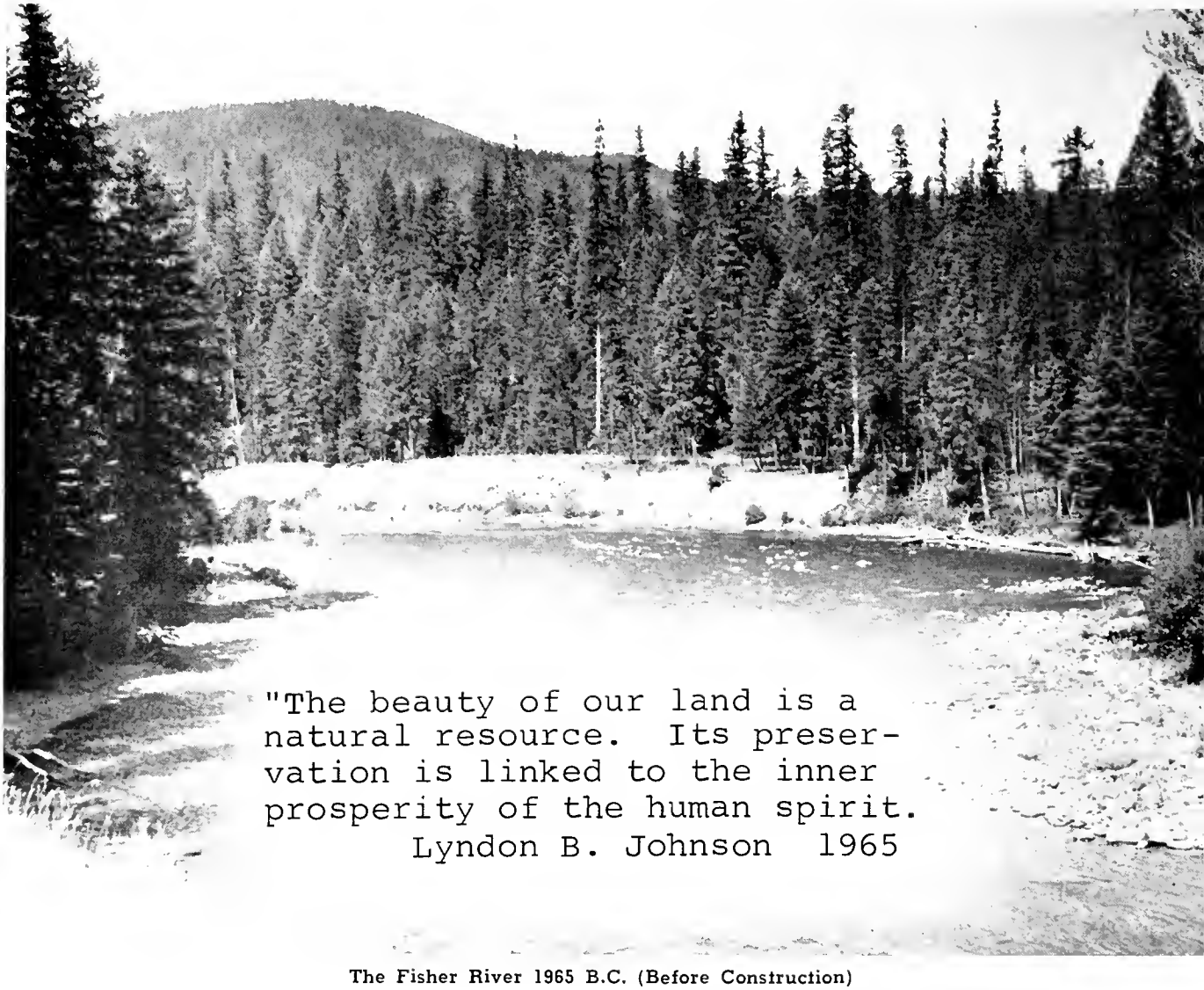
The earlier poisonings were partially a side effect of the much touted buffalo slaughters. As the buffalo disappeared, many of the professional hunters turned to the taking of pelts for a living.

The practice of poisoning which began as a matter of personal enterprise, soon became a matter of public expense. Tax money was fed into the poisoning of wolves to help the cattle industry. Sheepmen, seeing public funds going to the cattle industry, soon managed to gain funds for the control of coyotes also. Professional hunters and trappers were employed and bounties were added as an incentive to killing coyotes. In California, for example, during the 18 months ending June 30, 1894, almost 72,000 coyote scalps were submitted for bounties.

So man himself, and winter, remain the most persistent and deadly enemies of the coyote. Many naturalists, however, credit the coyote with enough genius and tenacity to run the gamut of traps, poisons, guns, starvation, and bitter winter.

Perhaps, as Seton has predicted, as long as there are men to hear them, the coyotes will follow the setting sun to some lonely plateau for their "evening song."

RAVAGE THE RIVER

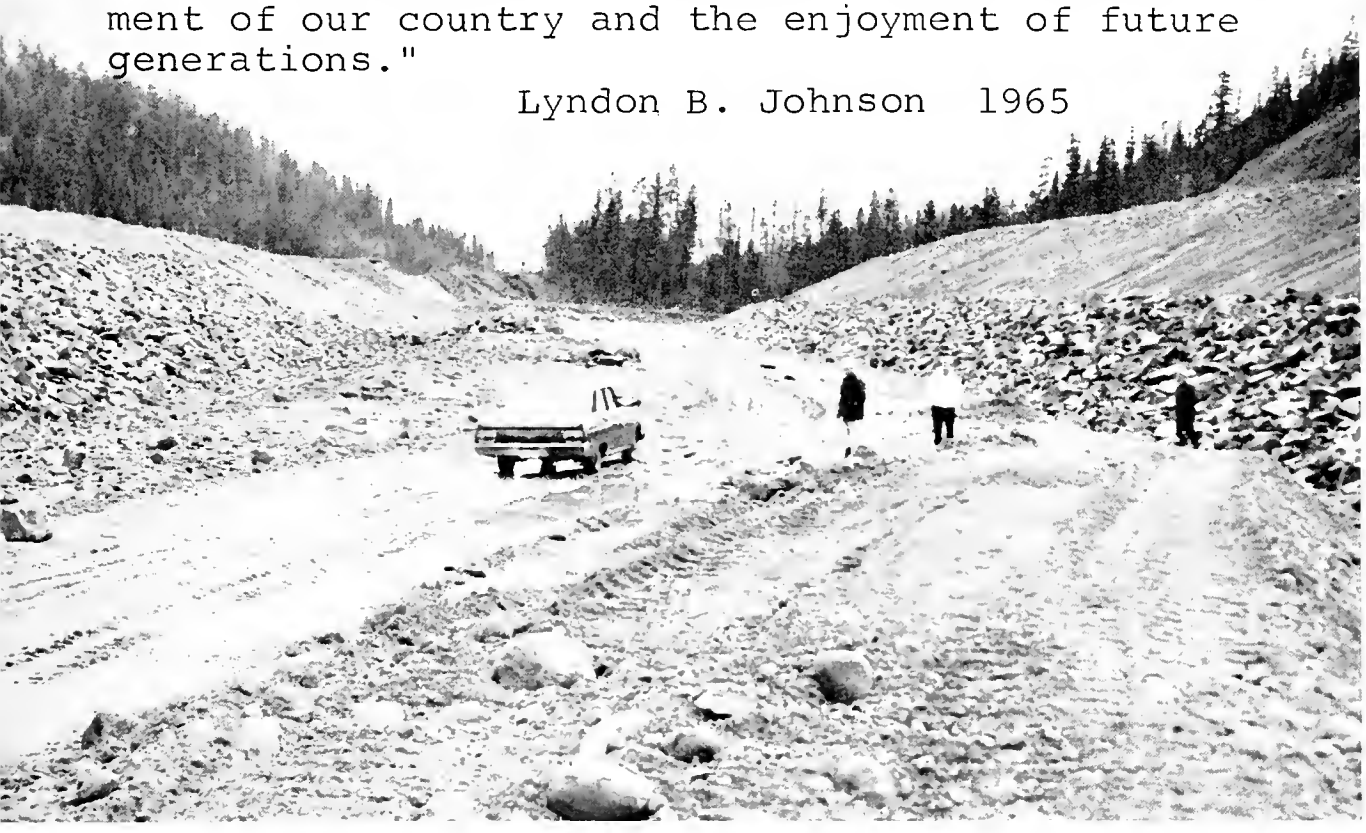


The Fisher River 1965 B.C. (Before Construction)

RAVAGE THE RIVER

"It is true that we have often been careless with our natural bounty. At times we have paid a heavy price for this neglect. But once our people were aroused to the danger, we have acted to preserve our resources for the enrichment of our country and the enjoyment of future generations."

Lyndon B. Johnson 1965



Preparing the Fisher River for the "enjoyment of future generations."

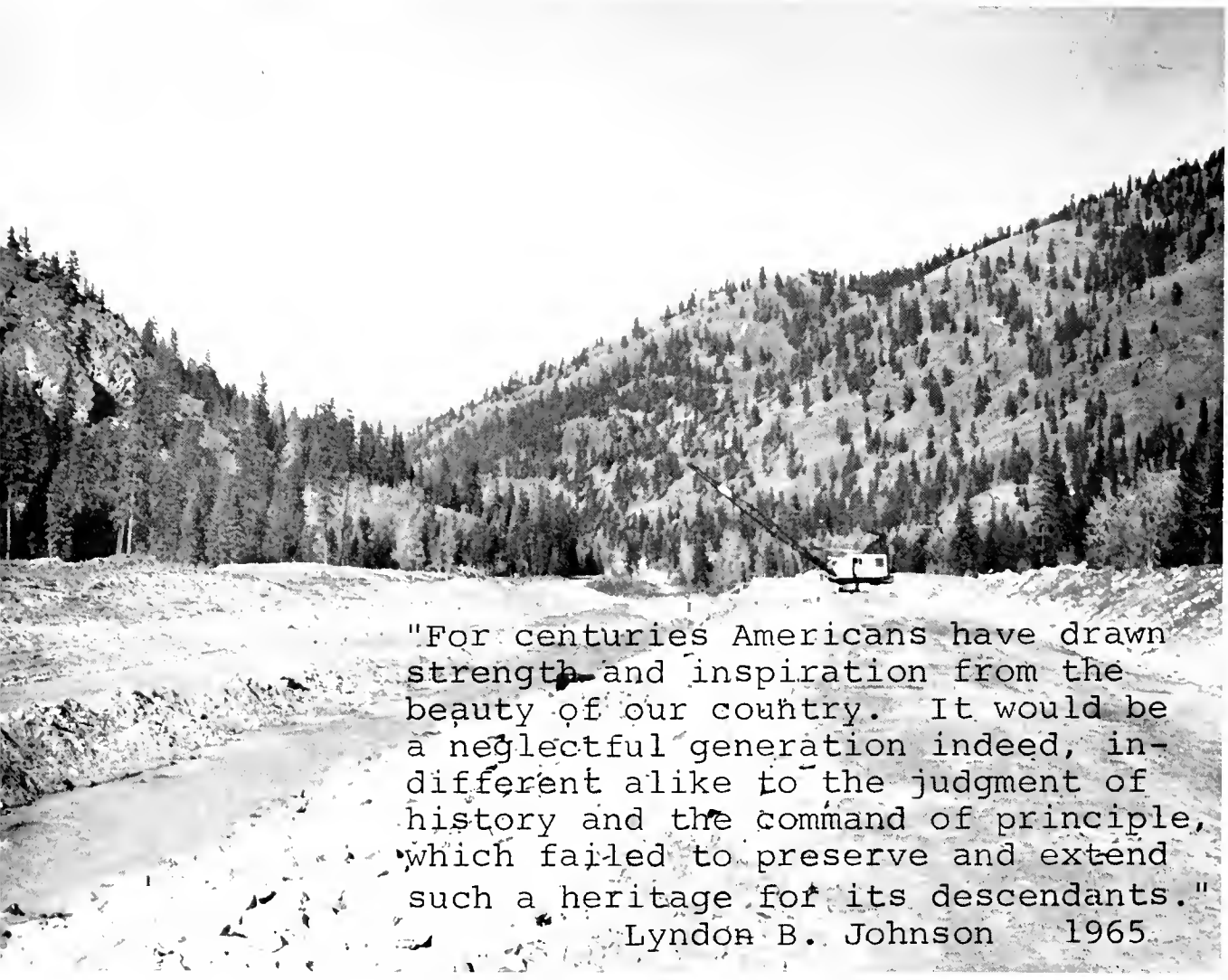
—By Jim Pozewitz

Prior to the 1963 session of Montana's State Legislature, the state was buzzing with activity that centered around Montana's stream fishing resource. Led by the Jaycees, numerous groups such as sportsmens' clubs, civic groups, garden clubs, and just plain citizens joined the battle and saw through to passage the first legislation that protected trout streams from physical destruction. It wasn't easy. This new idea was controversial, the debate was heated, and the Bill as finally passed carried a two-year expiration date.

Between the 1963 and 1965 sessions of the legislature these citizens groups continued their efforts while legislators and government administrators watched the workings of the temporary law. The interim effort and obvious benefits resulting from the law were so impressive that an improved "Stream Preservation Bill" was passed by the 1965 Legislature with only a single dissenting vote in both houses.

That battle was won, but the war is far from over. The bucket that contains Montana's stream fishing resource is full of holes, and although some of the major leaks are plugged, the drain continues. The accompanying photographs depict the U.S. Army Corps of Engineers at work in 1966. They are in the process of relocating the Great Northern Railroad and their victim is your Fisher River.

Since the Corps is not an agency of state government the provisions of our Stream Preservation Law do not apply to them. The

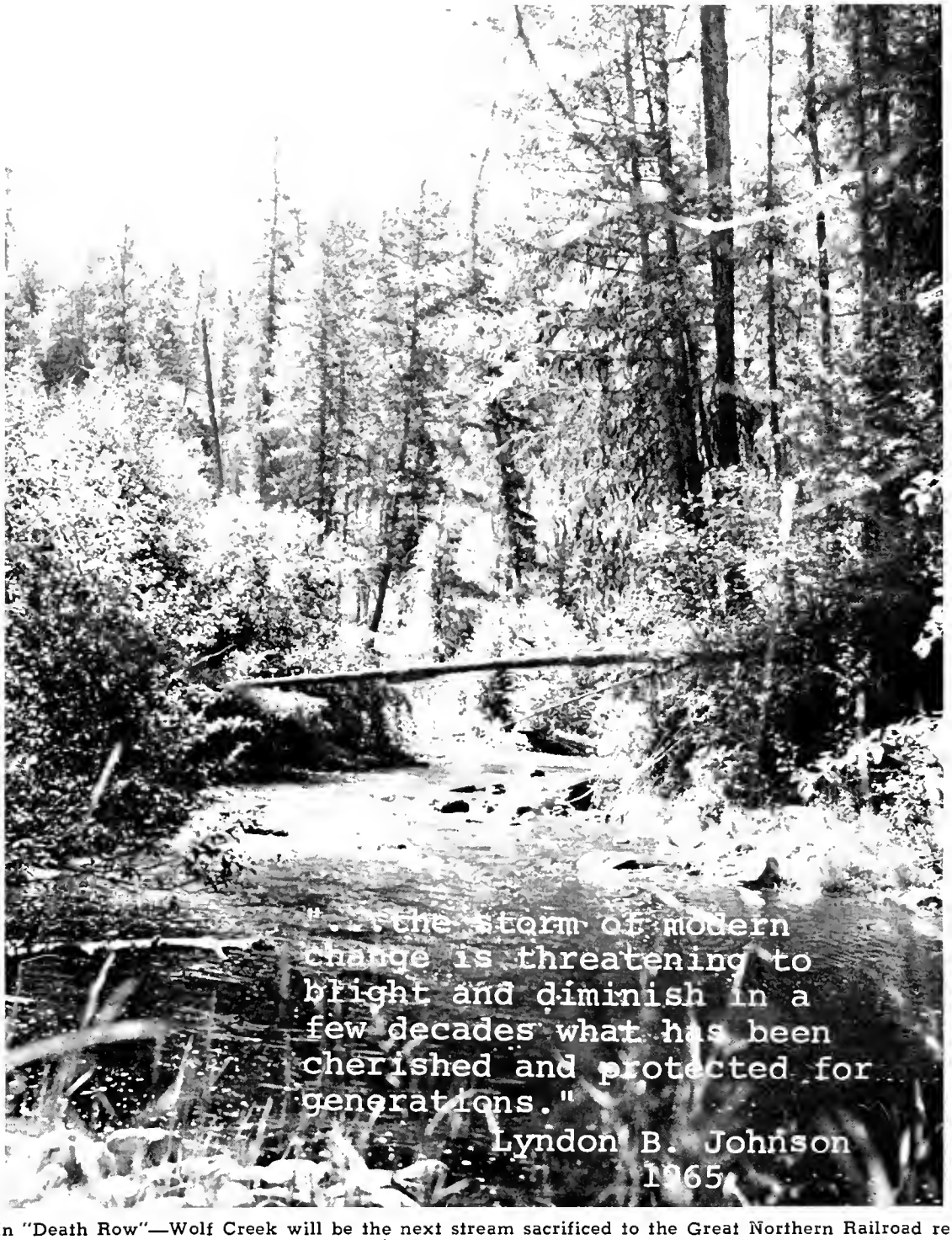


U.S. Army Corps of Engineers working on a channel change of Montana's Fisher River to accommodate the Great Northern Railway.

intent of Montana's citizens as reflected in their legislature is apparently of little or no concern to them. Instead the Federal Government when operating in Montana brings along its own set of ground rules. These rules in this instance are known as the "Wildlife Co-ordination Act." Under these rules, each day that a fisherman uses the river in question is worth about $3.00—the river itself apparently is without value. If the "fisherman days" total up to less than the additional cost of building the railroad away from the stream, good-by stream, good-by Fisher River.

Now that the Fisher River is destroyed you might suspect the neighboring Wolf Creek would assume a higher value since the supply of trout streams has been further diminished. Not so under federal ground rules and Wolf Creek goes this summer. The Wildlife Co-ordination Act, while purporting to serve fish and wildlife, in this case is used to justify the destruction of its habitat. The Fisher River is dying testimony to the ineffectiveness of this act when applied by unquestioning bureaucrats.

The fight to preserve Montana's once rich stream fishing resource is far from over. It can only be won by increased public concern and renewed vigor by those who fought so well before.



In "Death Row"—Wolf Creek will be the next stream sacrificed to the Great Northern Railroad relocation. The stream lost its right to exist because it couldn't muster enough man-days of use at $3.00 each to justify its existence under provisions of the Wildlife Coordination Act.

TOADS OF MONTANA

By JEFFREY H. BLACK, University of Montana

. . . PHOTOS BY AUTHOR

Precious jewels catching warts, and cows giving bloody milk are just a few of the superstitions associated with the warty toad in the folklore of America.

The cause and effect relationship between toads and warts is traditional. Probably every boy and girl has heard that if one takes a toad in his hands, that he will "catch the warts". This is not true and is probably the most famous and erroneous belief associated with the toad. Even Tom Sawyer told Huckleberry Finn that warts on the hands are the price that one pays for handling toads, and the only way to get rid of warts was to repeat the magic words:

"Barley corn, barley corn, Injun meal shorts,
Spunk water, spunk water, swaller these warts."

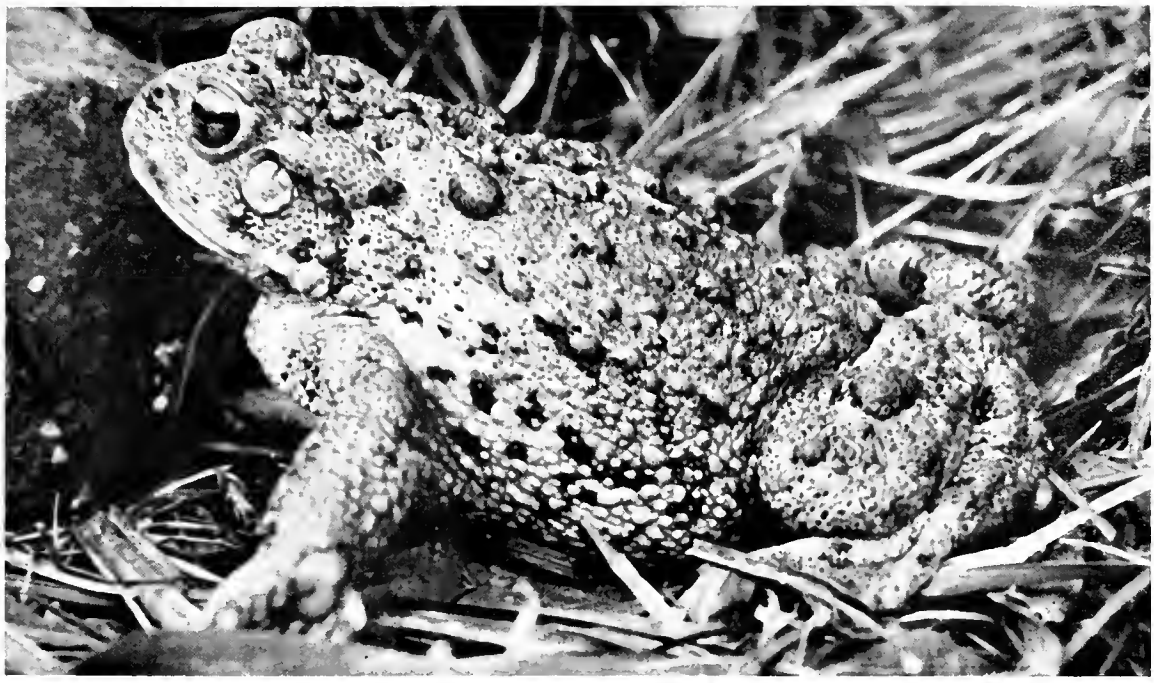
At one time it was a common belief in the country that if one killed a toad, his cows would give bloody milk. We now know that there is no connection at all between bloody milk and a killed toad.

Another superstition taught that the toad possessed a "precious jewel" in its head. This jewel could be worn as a talisman to ward off evil, but it is not known which part of the toad's head was used.

All Montana toads are able to secrete a substance which may cause irritation if it gets around the eyes and mouth. This secretion from glands in the skin, offers protection for the toad from predators, and will also be given off if handled roughly by humans. The fact that dogs and cats often become sick from mouthing toads, leaves no doubt that the secretion is quite toxic. The toxic secretions seem to have no effect on garter snakes or the hog-nosed snake which depend on young toads as a source of food.

The warty toad is readily recognized by most people in Montana. Toads are plump, have dry warty skins and are less streamlined than frogs. Toads give short clumsy hops, while frogs are agile jumpers.

Toads must return to water to breed, and their eggs must be laid in water if they are to develop. Breeding usually occurs in the spring, depending upon rain and/or temperature. The eggs are laid in strings of transparent jelly-like material containing a large number of small black eggs. The eggs hatch into tadpoles or pollywogs. As the tadpole grows, tiny legs develop, gills are replaced by lungs, and the tail is gradually absorbed into the tadpole's body and used for nourishment. Later the tadpole undergoes certain changes which enables it to leave the water, now able to survive on land.



The Western Toad . . . You can distinguish one kind of a Montana toad from another by using the simple key on the next page.

A toad depends almost entirely upon its tongue for catching food. The tongue is attached at the front end, but is free at its posterior end. When an insect is spotted, it flicks out its tongue, which is covered by a sticky substance, and the insect is captured.

There have been sufficient studies of the food habits of toads, to indicate they are economically important. An authority has estimated that in three months a toad, under normal circumstances, will consume approximately ten-thousand insects. The value of a Montana toad is in the service it performs in pest control through their feeding habits. The values are enhanced in eastern Montana, not only by their feeding habits, but their presence in numbers tend to keep the ground mulched through their burrowing activities.

The true toad family, Bufonidae, is world wide in distribution. Montana contains four species of this family. Telling these four species apart is very difficult and one must check the cranial crests between the eyes, the parotoid glands, the prominence of warts, and coloration and patterns.

A key is included in this paper to aid in the identification of unknown toads. The following key is made of couplets, which are numbered on the left. Each couplet is a pair of alternatives, one of which will describe the unknown toad. Choose the half of the couplet, starting with 1A, which describes your specimen. At the end of the couplet is a name or number. If the couplet ends in a number, refer to the couplet bearing that number and continue until the half couplet ends in a name; that is the name of the unknown specimen. Drawings are included and show some of the characteristics mentioned in the key. The numbers beneath the drawings are the same as those of the half-couplet which they illustrate. Try it, it's not complicated.

This key enables a specimen to be identified only provisionally, and the identification should be checked by means of a more detailed description of each toad following the key. Descriptions of each species are based largely upon direct observations of Montana toads. The general range of each species is shown as the shaded areas on the range maps.

I am grateful to Francis R. Cook at the National Museum of Canada for his helpful suggestions and up-to-date information on

Canadian amphibians. I also wish to express my appreciation to Dr. C. V. Davis of Montana State University and Dr. R. B. Brunson of the University of Montana for use of their collection records.

A KEY TO THE TOADS OF MONTANA

Body with no covering of scales or bony, leathery armor; without tail; pupil of eye horizontal when contracted; skin warty and rather dry; parotoid glands present ..... **True Toad**

1A. Parotoid glands and interorbital crests present 2

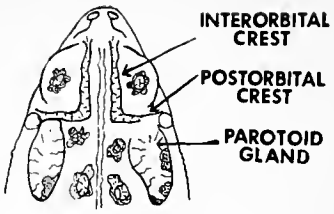
1B. Parotoid glands present; interorbital crests not present ..... **Bufo boreas**

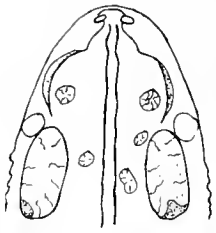
2A. Interorbital crests parallel and connected at rear margins; with or without a central groove; postorbital crests incomplete or lacking; ventral surface with numerous black spots ..... **Bufo hemiophrys**

2B. Interorbital crests distinct and seprated at posterior margins; postorbital crests complete 3

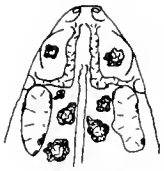
3A. Interorbital crests that diverge and are usually well separated at posterior margins and extend diagonally forward to form a V with a bony elevation between and behind the nostrils, venter unspotted ..... **Bufo cognatus**

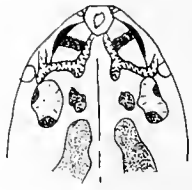
3B. Interorbital crests nearly parallel; parotoids in contact with postorbital crests; venter unspotted or with a single chest spot ..... **Bufo woodhousei**




1B

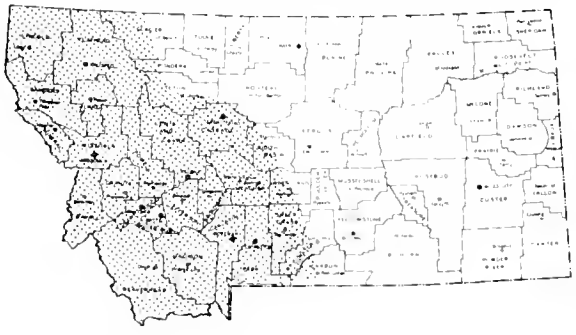

1A, 2A


1A, 2B, 3B


1A, 2B, 3A

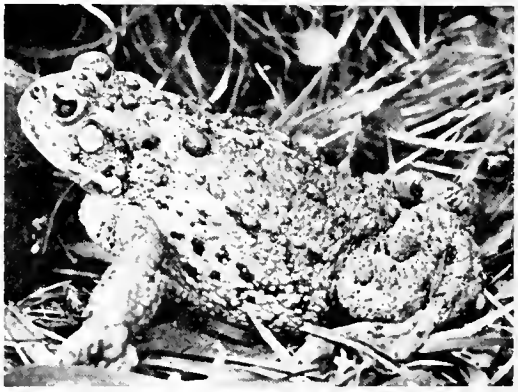
The above illustrations show identifying characters and are to be used with the accompanying key.

WESTERN TOAD
(Bufo boreas boreas)



Distribution:

The western toad is found in all of western Montana and ranging east to the flat and rolling prairie. It is found in all counties west of the Continental Divide and as far east as Chouteau, Judith Basin, Wheatland, Golden Valley, Stillwater and Carbon counties. It may also occur on the isolated low mountain groups such as the Little Rockies, Highwoods, Bearpaws, Judiths and Big Snowys. It will not be found in the flat and rolling plains which surround the isolated mountain groups. This toad exhibits remarkable versatility in its choice of habitat.



Western toad—Note the large warts on the back surface and the large wart on the tibia. Interorbital and postorbital crests are not present in this species. Shaded areas on map shows general distribution in Montana.

Description:

The average snout-vent length for adults is 2-5 inches. The complete lack of supraorbital and postorbital crests will usually identify this toad. The general dorsal color is light gray or greenish to a dull black. Numerous black pitted warts cover the dorsal surface. These warts are usually light brown with small black pits and may be set in a black spot. The warts are larger than those found on other species in Montana. The vertebral stripe is white and usually continuous from behind the nares to the anus, but may be broken. Parotoid glands are oval, distinct and smooth. The interparotoid distance is greater than the width of the parotoid glands. Each eyelid usually contains one large wart. Sole tubercles are light brown and have no cutting edge. A well-developed fold of skin is on the tarsus from the inner sole tubercle to the heel. There is usually a large wart on the tibia. The venter is usually whitish with varying amounts of dark spotting. Variation in the typical Western toad is found at high elevations in Glacier National Park. The size is smaller and the interparotoid distance is usually the same as or less than the width of the parotoid glands. The dorsal warts are large and each is set in a dark blotch. The vertebral stripe is not continuous, but broken by black blotches or warts. Females of the Western toad are usually larger and heavier than males. Males also have nuptial pads on the thumb and inner fingers during the breeding season. Males do not have the dark throat that is found in other toads of Montana.

Breeding:

In Montana most breeding occurs from March to June, depending upon the temperatures. These toads exercise little discrimination in selection of their breeding sites. Any body of water without a strong current fulfills the qualifications. Breeding has been observed in pools of water along the Bitterroot River, springs, glacial ponds and marshy areas. Females may lay as many as 16,500 eggs.

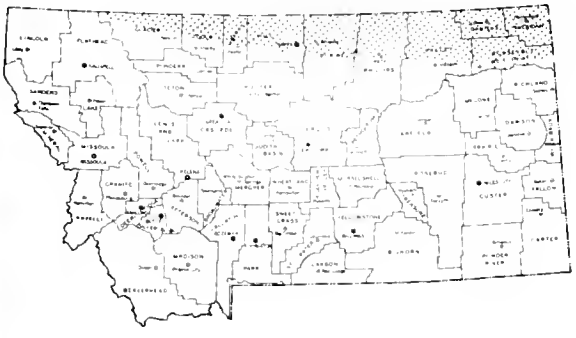
Habitat:

The preferred habitat of the Western toad seems to be moist areas near water. They are especially numerous around bodies of water such as lakes, glacial ponds, mountain streams, springs and along rivers. Adults have also been found in moist meadows and thickets up to 9,500 feet of elevation. The Western toad is common around human habitations in western Montana where it is found in gardens, yards, and even window boxes.

Behavior:

When disturbed the adults of the Western toad try to escape, but their short hops are very slow. When not disturbed, individuals usually walk. This toad is active at night and is occasionally found during the day. During the daytime, it seeks shelter under logs, boards, rocks and even under old car bodies. In breeding ponds, males are usually found with their front feet on the bank, logs or rocks along the edge of the pond. During the breeding season, or when handled, males usually utter a series of soft chirping sounds. The females do not chirp.

CANADIAN TOAD
(Bufo hemiophrys)



Canadian toad—Note the lack of postorbital crests. Other general characteristics are typical of the species. Shaded portion of map shows general distribution in Montana.

Distribution:

Northern Montana in parts of Glacier, Toole, Liberty, Hill, Blaine, Phillips and Valley counties; throughout Daniels and Sheridan counties and with a southern Montana limit in Roosevelt county where it enters North Dakota. The range of the Canadian toad in Montana, lies within the area formerly covered with the Laurentide Ice Sheet.

Description:

The average snout-vent length is 2-3 inches for adults. The dorsal color is brown to white with many brown warts. Most of the warts are set in black spots. A cream or white vertebral stripe is prominent from the interorbital crests to the anus. The parotoid glands are long and not greatly elevated above the dorsal surface. Each eyelid contains a black bar or spot which may have one or more brown warts. The interorbital crests may form a solid "boss" on the head, but there is usually a well developed groove between the parallel interorbital crests. The interorbital crests are nearly always joined across their posterior edges. Postorbital crests are weakly developed or absent. The legs and feet contain black spots or bars over their total length. The tibia is covered with spiny warts. Both sole tubercles have a free cutting edge; the inner large, the outer small. The ventral surface is light brown to white with numerous black spots of various sizes. Males can usually be distinguished from females by their dark colored throat and nuptial pads on the thumb and inner fingers during the breeding season.

Breeding:

The Canadian toad probably starts breeding from late April to early June in Montana, with the peak time starting with the first good rain.

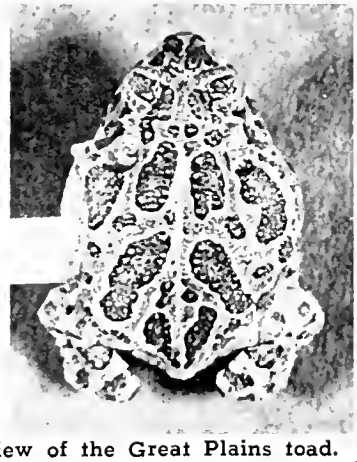
Habitat:

After the breeding period in Montana, adults will be encountered most frequently along pond margins throughout their season of activity. They seem to prefer ponds with relatively stable water level surrounded by sedges and bulrushes, among which they feed. Their distribution in Montana lies in the short grass prairie or undifferentiated grassland.

Behavior:

When frightened this toad may swim well out from shore or run through the sedges and bulrushes. The Canadian toad begins hibernation in late August or September by moving to slight rises in ground level where they burrow to spend the winter. It has been shown in Minnesota that these toads burrow during the winter just enough to keep ahead of the frost line in the soil and follow the frost line back up for spring emergence.

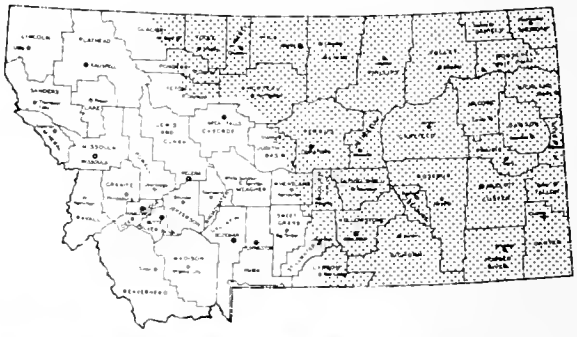
GREAT PLAINS TOAD
(Bufo cognatus)

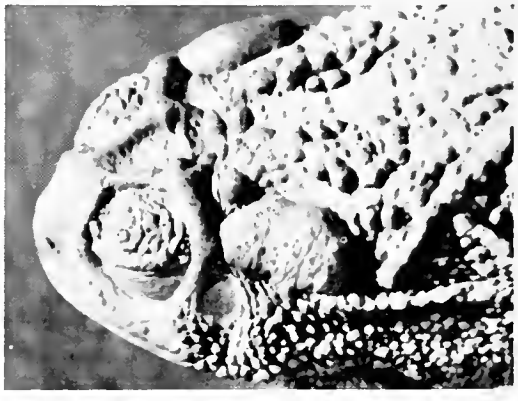


Back view of the Great Plains toad. Note the well defined dark blotches in symmetrical pairs on the back.

Distribution:

The Great Plains toad has an extensive distribution in the short grass prairie of eastern Montana. Its western Montana limit is in Glacier, Pondera, Teton, Cascade, Judith Basin, Wheatland, Sweet Grass, Stillwater and Carbon counties. The lack of collection records in northeastern Montana is bounded by a lack of records to the north in southeastern Saskatchewan and extreme northwestern North Dakota. This does not mean the species does not occur in this area, but merely shows where collectors have not been at the right time.





Head view of the Great Plains toad. Note the divergent interorbital crests which form a V with the bony elevation between and behind the nostrils. Shaded portion of map shows general distribution in Montana.

Description:

The average snout-vent length in adults is 2-4 inches. The dorsal color is gray to light brown. Well-defined dark blotches, usually in symmetrical pairs, are sharply outlined on the back. These are usually on either side of a faint vertebral stripe. The dark blotches contain many small warts and may be outlined with a narrow white line. All warts are small. The interorbital and postorbital crests are well developed. The interorbital crests are divergent and separated at their posterior margins and extend diagonally forward to form a V with a bony elevation between and behind the nares. Postorbital crests are complete and touch the parotoids. The parotoid glands are obvious, oval in shape and set wide apart. The sole tubercles each have a cutting edge. Toes are dark tipped. The venter is light and unspotted. Females usually exceed the males in size. Males have a vocal sac which forms a black apron on the throat which is partly concealed by a flap of light skin.

Breeding:

Breeding occurs only after rain during the months of April through August if the temperatures are not too low. This is a species which characteristically breeds only in clear, shallow pools. Breeding can occur in artificial cattle ponds, flooded shallow fields, shallow ditches or any temporary rain-formed pool on the short grass prairie. The Great Plains toad has been found to be quite restricted in its selection of breeding places. Eggs are deposited in two continuous strings wound around plants on the bottom of the pool. A female may produce about 20,000 eggs.

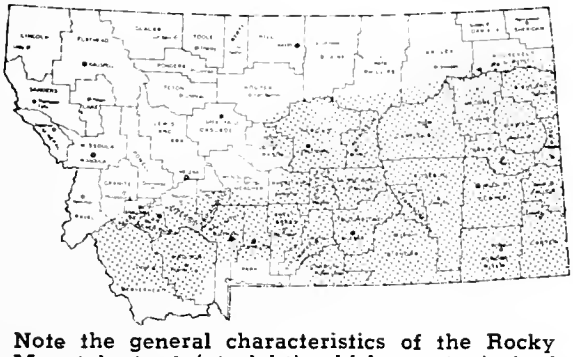
Habitat:

The Great Plains toad in Montana seems to prefer the higher portions of the short grass prairie. It is found in agricultural lands, along irrigation ditches, and in the floodplains of streams and rivers. This toad's habitat is usually the short grass prairie, but also occurs in the eastern Montana pine forest and savannah, and the foothill grasslands and sagebrush.

Behavior:

This species is normally active only at night. During the day it spends much of its time underground in a shallow burrow it digs with the sole tubercles on the hind feet. These burrows are only deep enough for the body of the toad to fit in the burrow with the dorsal surface flush with the surface of the ground. Males of the species too, utter a series of soft chirping sounds when handled. The females do not chirp.

ROCKY MOUNTAIN TOAD
(Bufo woodhousei woodhousei)



Note the general characteristics of the Rocky Mountain toad (at right) which are typical of the species. Shaded portions of the map shows general distribution in Montana.

Distribution:

The range of the Rocky Mountain toad in Montana lies east and south of the Continental Divide. Its northern boundary appears to be slightly north of the Missouri River where it enters Roosevelt, Valley, Phillips, Blaine and Chouteau counties. Its range then goes south and west to Gallatin County where its range may continue to the Idaho border. South of the Missouri River, it is found in all counties to the Wyoming border. It is probably the most versatile and wide ranging of Montana toads in its distribution.

Description:

The average snout-vent length for adults is 2-3½ inches. The dorsal color is brown or olive green and some are light gray. Small light brown warts cover the dorsal surface. Warts are often set in small black spots which may be ringed with a narrow white line. These black spots usually contain only one or two warts, but they may be larger and contain many warts. The vertebral stripe is white and continuous from between the interorbital crests to the anus. The parotoid glands are long, narrow and elevated. There

Head view of the Rocky Mountain toad (left)—Note the nearly parallel interorbital crests and well developed postorbital crests that touch the parotoids.

Head view of the Canadian toad (right) shows the parallel interorbital crests connected at their rear margins.

is a black or white spot on each eyelid with one to two warts. The interorbital crests are prominent and parallel or nearly so. The postorbital crests are well developed and in contact with the parotoid glands. Sole tubercles are brown and the inner has a sharpened edge. Toes are dark brown topped. The ventral surface is unspotted except for a single black chest spot, but this is often broken up into two, three or a cluster of smaller spots. The chest spot is not always present. Young toads are spotted dorsally in two colors on a grayish background. The larger spots are dark colored, while the smaller are tiny and red. Males can be distinguished from females by their dark throat and nuptial pads on the thumb and inner fingers during the breeding season.

Breeding:

The Rocky Mountain toad starts breeding after spring and summer rains, if the temperature is not too low. Breeding can occur from late April to August with its breeding activities staggered throughout the summer. These toads breed in a great variety of places such as farm ponds, ditches, flooded fields, backwashes of streams and probably use isolated pools in dry creek beds for late breeding. A female may produce as many as 25,644 eggs of one of two rows in a long string.

Habitat:

This species is the common toad in the floodplains of the Missouri and Yellowstone Rivers west to the Gallatin River. The vegetation habitat in eastern Montana includes short grass prairie, sagebrush, and stream bottoms, with most being found in the short grass prairie bordering the larger rivers and their tributaries. In the Gallatin Range near Bozeman, its habitat is unique for the species, where it is found in the forests at elevations of 7,000 feet. In habitat, the Rocky Mountain toad is the most versatile toad in the state.

Behavior:

Young of the Rocky Mountain toad are active during the day, but with increasing age tend to feed later at night. Adults were found to be common under streetlights where they find a source of insect food attracted to the light. These toads are also common occupants of many gardens in eastern Montana.

WHAT'S IN a WING?

by Tom Mussehl
Chief, Research Section
Montana Fish & Game Department

Wildlife managers have long recognized that certain parts of the animal anatomy can provide some "vital statistics" about the owner. For example: the age of a deer or elk is best determined by examining replacement and wear of certain teeth; layers of dentine inside a bear's teeth are reliable indicators of age; certain leg bone characteristics reveal the younger age classes of elk; and ages of many fish can be determined by growth rings on their scales.

Wings are the most useful parts of nearly all our upland game birds for getting biological information. The fact that they can be collected rapidly at checking stations and examined later is a big advantage. This minimizes the time that hunters are held up while their birds are being checked. After a day in the field, most hunters are anxious to get their birds into the freezer or frying pan.

Since 1959, upland game bird wings have been collected from Montana hunters at checking stations and through the mail. Thousands of hunters have helped out and have usually provided 5,000 to 7,000 wings per year. A question often asked is "What is learned from the wings?" Game bird wings can provide several items of basic information, including species, age, and sex of the bird from which the wing was taken. Certain aspects of the bird's life history, such as reproductive activity, can be learned. This information can be of value to the hunter as well as to the game worker.

Species identification by wing feathers alone is generally not necessary for the hunter, but is essential to the wildlife worker who may have only the wing to examine. The distinctive wing size, shape and color can be used to identify species.

The characteristics of wings that allow age determination are of prime importance to the biologist and to the hunter who may wish

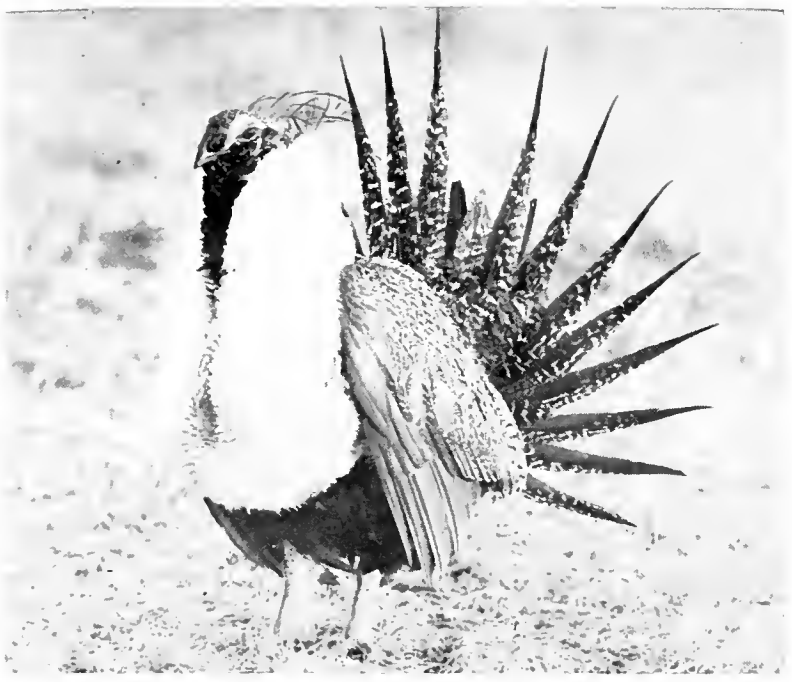
By examining the wings of game birds, biologists learn many things which are useful in the management of upland game bird species.

to separate young from old birds for cooking purposes. Young of the year of Montana upland game birds (except pheasants) can best be identified in the fall by examining the two big feathers on the outside of each wing. These feathers will be slender and pointed on young birds, but older birds have generally replaced the pointed, outside two feathers with adult feathers that are more blunt and less slender. Samples of juvenile and adult wings are shown in Picture 2.

Hunting success depends largely upon the annual production of young birds. Upland game birds are prolific but relatively short-lived creatures. The potential to multiply and the annual death rate vary between different game bird species. For example, blue grouse usually hatch 6-8 eggs while Hungarian partridge may hatch twice as many. On the other hand, the annual loss of blue grouse (30-40 percent) may be only half that of "Huns." Production of young game birds fluctuates greatly between years and often between areas of the state within the same year.

Sound game bird management is dependent upon accurate information about annual production. Therefore, methods for separating young and older age classes of birds are important tools. The ratio of young to adult birds, determined during summer field studies, indicates the success of the year's hatch before the hunting season. Wings collected from hunters provide more extensive information

The outer two wing feathers are the keys to determining age of many upland game birds. Wings shown here are of sage grouse.



Not only can the species of bird be disclosed by examining just wings, but a trained eye can also determine the sex of the bird.

as to the statewide patterns and trends of annual bird production. Production information, learned from wing examination when combined with field surveys of breeding stock, brood production and survival, and hunter success, provide a gauge to the status of game bird populations and their utilization throughout Montana. Statewide patterns and trends of game bird reproduction may also provide clues as to the possible influences of climate and land-uses.

The outside two wing feathers of juveniles are relatively pointed and are retained during their first fall. Adults can be identified by the rounded, blunt-shape of these outside two feathers or by their absence or replacement. (Yearling birds may have one or two pointed outside feathers but with a faded, ragged appearance).

Sex of some of the game bird species can be identified by differences in wing color and feather length. Male and female wings can be differentiated for sage grouse, blue grouse, sharptailed grouse and Hungarian partridge. Picture 3 shows differences in color of male and female blue grouse wings.

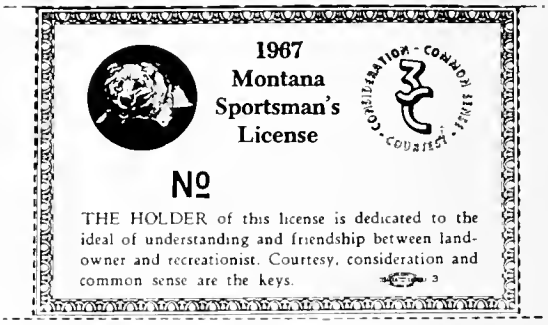
The molting pattern of adult female wings can provide a hindsight into the reproductive activities of birds from various areas. Wing feather molting of females begin after the end of nesting activities. Variations in nesting success is reflected by different molting patterns among female wings collected in the fall. A hen that fails in nesting attempts starts molting her wing feathers earlier than does a successful hen. Thus, the molt stages of female wings obtained from hunters in September can give clues as to nesting success several months earlier. The percent of sage grouse hens successfully bringing off broods has been known to vary from annual extremes of from 20 to 80 percent. Statewide patterns of game bird nesting success (or failure) can be indicated by an extensive collection of wings.

Selection of opening dates for bird hunting requires certain biological knowledge among other considerations. Managers must know the dates of bird hatching combined with juvenile growth rates to determine when young birds will be sufficiently developed for harvest. The wing is again an important link in obtaining the necessary information. Methods for determining the age (in weeks) of young grouse have been obtained from utilizing wing feathers development. Studies of banded birds, (both wild and pen-raised)

provide these methods. Hatching dates can be determined prior to hunting by field examinations of young birds and by observations during mating and brood raising. Later examination of the thousands of wings obtained from hunters provide an extensive check of statewide hatching date patterns. Planning of field work such as brood surveys depends upon a knowledge of hatching date patterns of the various species. The hatching dates can be of further value for evaluation of possible effects of weather, cover conditions, agricultural practices, etc., on annual production of young birds in various areas.

A new look that has been added to annual wing collection is the use of modern data processing equipment. The information from each wing has been coded and punched on IBM cards. Programming and computing of the mass of information from wings is nearing completion and will provide a ready access to statewide patterns and trends of game bird population features. Wings can provide a continued advancement in the knowledge of game bird populations and their changes throughout Montana. Such knowledge is important to insure a maximum of hunting opportunity for a growing number of Montana gunners.

AVAILABLE to SPORTSMEN



An Investment in Recreation—Good Will

The dividends from this investment won't be counted in dollars and cents or other material items. The dividends we're talking about will be in free access to some shady place with sparkling water, in fun-filled hours of fishing, boating or camping, and in good will between landowners and recreationists.

The "Montana Sportsman's License" is now being offered to sportsmen whose interests in conservation include more than the immediate privileges that come with hunting and fishing licenses. The license is made of a heavy water-resistant material and includes a billfold-sized card portion which may be clipped and carried in a billfold or purse. This card will identify the holder as someone with a special interest in conservation.

In addition to a card, each Montana Sportsman's License buyer will be given an attractive decal. The decal will bear the owner's Sportsman's License number. It is expected that landowners who see these decals will come to recognize the holders as "good risks" —persons who respect the property and rights of landowners.

The Sportsman's License is $20.00. This authorizes the holders to hunt game birds, to fish, and to take 1 deer, 1 elk and a black bear. The purchase price of these licenses would total $12.00 under regular license sales. The additional "investment" cost of the Sportsman's License will be used in programs to better relations between landowners and recreationists, to provide access to recreation spots, and for certain acquisition programs.

The Sportsman's License is available from the Helena Fish and Game office, from Fish and Game district headquarters' offices, and from state game wardens. Fish and Game district headquarters offices are located in Kalispell, Missoula, Bozeman, Great Falls, Glasgow, Billings, and Miles City.

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